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## DISEASES CAUSED BY BACTERIA AND FUNGI

PATTISON, I. H. & MATTHEWS, P. R. J. (1957). **Observations on the serological identification of bovine coagulase-positive staphylococci.**—*J. Path. Bact.* **74**, 335-346. [Authors' summary copied *verbatim*.] 319

Attempts to identify bovine coagulase-positive staphylococci by the precipitation test were unsuccessful because of extensive sharing of precipitating antigens among strains of widely different origin, and because many sera defied all attempts at absorption.

A flocculation test, the technique of which is described, gave more promising results than the precipitation test, but because it failed to detect soluble as well as insoluble antigen-antibody combinations it probably did not demonstrate all the antigen-antibody reactions that were taking place.

A preliminary examination of the application of the diffusion-plate technique to bovine coagulase-positive staphylococci indicated that constant serological differences existed between groups of strains. However, much more work is required before a classification of these staphylococci may be formulated.

TRAUTWEIN, G. (1956). Die experimentelle Pneumokokkeninfektion des Kalbes. [Experimental pneumococcus infection in calves.]—*Arch. exp. VetMed.* **10**, 769-816 & 831-858. 320

A detailed account of experimental infection of 41 calves with *Str. pneumoniae*. Various routes of infection were used. 34 calves became ill and 31 of them died. Infection by the respiratory route resulted in pneumonia: material from infected human beings caused pneumonia when inhaled by calves.—R.M.

TRUSZCZYŃSKI, M. (1957). Paciorkowce w schorzeniach u świń. [Role of streptococci in pig diseases.]—*Méd. vét., Varsovie* **13**, 402-405. [In Polish. English and Russian summaries.] 321

In 8 out of 589 pig carcasses examined bac-

teriologically streptococci were recovered from blood and visceral organs: 6 belonged to Lancefield Group C, 1 to A and 1 to B. The author is of the opinion that in young pigs, 1-6 weeks old, streptococcal infection can cause a fatal disease, whereas in older pigs these organisms appear as secondary invaders.—M. GITTER.

LANCEFIELD, R. C. (1957). **Differentiation of group A streptococci with a common R antigen into three serological types, with special reference to the bactericidal test.**—*J. exp. Med.* **106**, 525-544. [Author's summary and conclusions modified.] 322

In further study of streptococci having the R antigen, the bactericidal test depending on phagocytosis and destruction by human w.b.c. in the presence of M antibody was used instead of the mouse protection test in investigating the type-specific M antigens of these organisms. The results were confirmed by M anti-M precipitin tests, and a correlation between the M and T antigens of the strains was shown.

On the basis of a specific M antigen, Type 28 was shown to comprise Griffith's strain Small and four other strains containing the R antigen. A number of other strains previously thought to belong to Type 28 on the basis of R antigen reactions were identified as belonging either to Type 2 or to a new type, designated 48, which shows a one-way cross-relationship to type 13.

The bactericidal test is suggested as a useful method for assessing M antigen in Group A streptococci and for establishing type specificity by means of a biological test which is more widely applicable than the standard mouse protection test.

ROSS, J. M. (1957). **The pathogenesis of anthrax following the administration of spores by the respiratory route.**—*J. Path. Bact.* **73**, 485-494. [Abst. from author's conclusion.] 323

The observations made support the view



that no true respiratory anthrax infection is produced by inhalation of dry spores at  $1\ \mu$  particle size. The infective particle sets up a general infection after introduction into the respiratory tract by virtue of the phagocytic character and inherent mobility of cells found in the normal lung. The spores ingested by the phagocytic cells and carried by the normal lymphatic route to the tracheo-bronchial lymph nodes germinate in the cell in the sinus of the lymph node, and infection begins by the extracellular proliferation of the vegetative form freed from the phagocyte. The vegetative organisms find their way into the efferent lymph-channel of the node and pass on to the blood-stream along the normal channels of lymph-flow and generalized anthrax infection is initiated.

HARRIS-SMITH, P. W., SMITH, H. & KEPPIE, J. (1957). **Production in vitro of the anthrax toxin previously recognized in vivo.**—*J. gen. Microbiol.* **16**, No. 1. p. viii of Proceedings. **324**

*Bacillus anthracis* yielded toxin after 4–5 hours of incubation in g. pig blood. After 6–7 hours, however, the toxin disappeared. Extracts of *B. anthracis* from cultures 7 hours old rapidly destroyed the toxin.—M.G.G.

ZIMMERMANN, F. (1957). Beitrag zur Tuberkulin-Hautreaktion beim Pferd. [The tuberculin reaction in the horse.]—*Tierärztl. Umsch.* **12**, 74-77. **325**

Of 601 horses on 306 farms 168 reacted to the i/d tuberculin test with bovine tuberculin. In 66 horses the swelling affected a cervical lymph node and in 41 the lymphatics became swollen. The average age of the reactors was  $10\frac{1}{2}$  years; most of them were born before the start of the TB. eradication campaign in 1950. On 6 farms new reactors were found in the attested dairy cattle; each of the farms contained one of these horses.—M.G.G.

DIETER, R. (1957). Zur Art, Bedeutung und Häufigkeit der Tuberkulin-Hautreaktion beim Pferd. [Nature, significance and frequency of reactions to the intradermal tuberculin test in horses.]—*Rindertuberkulose* **6**, 13-21. **326**

During tuberculin testing of cattle herds, horses on the farms were tested at the same time. The injection consisted of 0.1 ml. of bovine tuberculin in the neck. Of the 517 horses 134 reacted with swellings ranging in size from that of a lentil to that of the palm of a hand. These were soft and oedematous, with a firmer centre marking the point of injection. In 14 horses the

swelling involved the lymphatics. Bacteriological findings will be reported in a later article by Meyn.—M.G.G.

BURGISSER, H. & SCHNEIDER, P. A. (1957). Avortements à la suite d'une infection à bacilles tuberculeux d'origine aviaire chez la vache. [Abortion in cows following infection with tubercle bacilli of avian origin.]—*Schweiz. Arch. Tierheilk.* **99**, 257-260. [In French. English, German and Italian summaries.] **327**

Two cows aborted on farms which had been free from bovine TB. for over 4 years. In one the uterus and udder were affected. Tubercle bacilli were demonstrated in the uterus, placenta and milk. Of the remaining 8 cows in the herd, 3 reacted slightly (1–2 mm.) to the i/d tuberculin test with avian tuberculin, but not with bovine tuberculin. Fowls on several neighbouring farms had TB. In the second case only the uterus was affected. Tubercle bacilli were demonstrated in the uterus and placenta; the milk was not examined. None of the other 12 cows in the herd reacted to tuberculin tests. Fowls on this farm had died from TB. in the previous year. Examination of smears from the placenta with Ziehl-Neelsen staining is recommended in cases of unexplained abortion.

—M.G.G.

NALETOV, N. A. (1956). [Reparative changes in tuberculous lungs in cattle.]—*Problemy Tuberkuleza* **34**, No. 6. pp. 49-55. [In Russian. French summary.] **328**

N. examined the lungs of 6 calves inoculated i/v or intratracheally with tubercle bacilli and killed between 18 and 96 days later, and also 90 cattle with spontaneous infection. He described the pathogenesis of pulmonary TB. Reparative changes were present even at the commencement of the tuberculous process, and did not indicate favourable progression of the disease. Healing was by encapsulation of necrotic material; complete regeneration of lung tissue in tuberculous lesions did not occur.

—R.M.

FREMMING, B. D., BENSON, R. E., YOUNG, R. J. & HARRIS, M. D., JR. (1957). **Anti-tuberculous therapy in *Macaca mulatta* monkeys.**—*Amer. Rev. Tuberc.* **76**, 225-231. [French and Spanish summaries. Authors' summary modified.] **329**

A group of 45 *M. mulatta* monkeys, 19 of which were clinically diagnosed as tuberculous on the basis of the intrapleural tuberculin test,



were isolated and treated with streptomycylidene isonicotinyl hydrazine sulphate for 30 months. One animal died from TB. 3½ months after treatment started. During the 9 months after cessation of treatment, 9 animals died or were killed; of these, 2 were untreated controls and 4 had been clinically diagnosed as tuberculous at the beginning of the experiment. None of these 9 showed gross, microscopic, or bacteriological evidence of TB. at P.M. examination. All untreated controls gave exclusively negative reactions to the monthly tuberculin test during the course of the experiment. It is claimed that these measures controlled and possibly eliminated TB. in a colony of *M. mulatta* monkeys.

HAWTHORNE, V. M., JARRETT, W. F. H., LAUDER, I., MARTIN, W. B. & ROBERTS, G. B. S. (1957). **Tuberculosis in man, dog, and cat.**—*Brit. med. J.* Sept. 21st, 675-678. [Authors' summary modified.] 330

The human contacts of 14 tuberculous dogs underwent X-ray examination and 9 significant cases of TB. were found among them. The dogs and cats owned by 37 patients with active TB. were examined, *Mycobact. tuberculosis* being recovered from swabs of the alimentary tracts of two dogs and two cats. Further investigation of all aspects of the subject would be materially assisted by a wider appreciation of the possibility of the occurrence of TB. in dogs and cats.

ZITRIN, C. M. & WASZ-HÖCKERT, O. (1957). **Preliminary experiments on passive transfer of protective humoral antibodies in tuberculosis.**—*Amer. Rev. Tuberc.* 76, 256-262. [French and Spanish summaries. Authors' summary modified.] 331

In preliminary experiments, fractions of serum from tuberculous patients, whole tuberculous serum, and immune gamma globulin (commercial) were found to inhibit the growth *in vitro* of the H37Rv strain of tubercle bacillus. The same test substances increased, to varying degrees, the survival time of mice infected with the Vallée strain of tubercle bacillus.

REISS, J. & TOWNSEND, S. M. (1957). **The evaluation of the egg embryo as a laboratory procedure for the rapid detection of the tubercle bacillus.**—*Amer. Rev. Tuberc.* 76, 315-319. [Authors' summary modified.] 332

The fertilized hen's egg can be utilized in a clinical laboratory for the rapid diagnosis of TB. Ten to twelve days of incubation after inoculation proved sufficient time for recovery of the organism in the egg embryo. Cultures negative for tubercle bacilli when tested by the

routine lab. method may be positive in the egg embryo. Slides were easier to interpret when made from the surface film and sediment in which the allantoic membrane had been suspended, rather than from the yolk emulsion. Microscopic examination of the allantoic material revealed acid-fast bacilli as often as did the yolk emulsion slides. Sections of allantoic tissue were of no greater value than the other egg materials examined.

WILL, D. W., FROMAN, S., KRASNOW, I. & BOGEN, E. (1957). **Culture characteristics and drug and bacteriophage resistance of avian tubercle bacilli.**—*Amer. Rev. Tuberc.* 76, 435-450. [French and Spanish summaries. Abst. from authors' summary.] 333

Preliminary studies of a large collection of acid-fast bacilli indicated that true avian tubercle bacilli were not susceptible to lysis by 4 recently isolated bacteriophages active against virulent human *Mycobact. tuberculosis*. To assess the possibility of using this phenomenon for identification of mycobacteria, 28 strains of acid-fast organisms, primarily avian in origin, were studied by various methods including cultural morphology on solid and liquid media, neutral red and "cording" reactions, susceptibility to phage lysis, and ability to produce disease in chickens.

It was concluded that (a) if an acid-fast bacillus was resistant to any of the 4 bacteriophages used [see *V.B.* 25, 575] it was probably not an avian bacillus and (b) if an acid-fast bacillus was resistant to all 4 phages, was relatively resistant to streptomycin, PAS, and isoniazid, and resembled avian cultures colonially, the organism was either the avian type tubercle bacillus or was related to it.

JOYNER, J. W. & CALHOUN, C. L. (1957). **Observations on *in vitro* behavior of altered mononuclear phagocytes following exposure to tubercle bacilli.**—*Proc. Soc. exp. Biol.*, N.Y. 96, 210-213. [Authors' summary copied *verbatim*.] 334

Mononuclear phagocytes which have been altered by ingestion of various particles, take up tubercle bacilli less readily than the same type cell in an unaltered state. This decreased phagocytic activity is observed with both attenuated and virulent tubercle bacilli.

MUFTIC, M. K. (1957). **Mutation of mycobacteria to proactinomycetes by radioactive cobalt.**—*Mycopathologia* 8, 121-126. [In English. French summary.] 335

When a smooth strain of the human



tubercle bacillus was exposed in Dubos-Tween-albumin liquid media to radioactive cobalt chloride, a new mutant strain developed which was chromogenic and weakly acid fast, showed a mycelial structure like the proactinomyces, and killed g. pigs in 3 weeks when inoculated i/p. This evidence is taken to prove that mycobacteria are fungi and TB. a mycosis.

—E. G. WHITE.

HOYT, A., DJANG, A. H. K. & SMITH, C. R. (1956). **Tuberculosis disinfection with diamine.**—*Publ. Hlth Rep., Wash.* **71**, 1097-1103. [Authors' summary modified.] **336**

N-dodecyl-1,3-propanediamine was a very effective disinfectant for tuberculous sputum, particularly in the presence of sodium hydroxide. It has a broad spectrum of antibacterial action, and inhibits the growth of sputum contaminants more than that of *Mycobacterium tuberculosis*. Its effect on bacterial spores is not known. It is slightly irritating to the skin, but no sensitizing ability was found. It appears suitable as a surface disinfectant for T.B. hygiene and probably for general sanitation also.

CHANDLER, R. L. (1957). **Development of vaccines for Johne's disease in sheep.**—*N.Z. vet. J.* **5**, 39-43. **337**

Five vaccines against Johne's disease in sheep were studied with regard to local reaction, immune body production and sensitization. The vaccines used were (i) that of Sigurdsson (1954) [*V.B.* **25**, 1572] except that liquid paraffin B.P. was used instead of light mineral oil; (ii) "microvaccine A", similarly prepared except that the dried heat-killed bacilli were ground in a ball mill until they were no longer acid fast with Ziehl-Neelsen stain; (iii and iv) similar microvaccines ("B" and "C") but containing differing amounts of pumice; (v) Weybridge vaccine. All vaccines were prepared from a bovine strain of *Mycobact. johnei* and were inoculated s/c in the brisket or behind the shoulder. Where lambs were vaccinated at 3 to 4 weeks old to simulate field conditions, microvaccine A gave the least local reaction and may prove suitable for routine use at the shoulder site. Complement-fixing antibodies were produced in response to all vaccines, but most rapidly to the Sigurdsson vaccine. A decline in antibody production was noted in all groups about one year after vaccination. During the first six months after vaccination, greatest sensitivity to johnin was produced with Weybridge vaccine, but during the second six months all groups showed a high

sensitivity. Lambs born to ewes vaccinated with microvaccine A may themselves possess immune body.—H. SCOTT McTAGGART.

HOWELL, J. (1957). **The cellular transfer of cutaneous hypersensitivity to avian tuberculin and johnin.**—*Canad. J. comp. Med.* **21**, 261-266. **338**

The possibility of passively transferring skin sensitivity to avian tuberculin by cellular exudates was tested in four experiments.

Pools of washed inflammatory exudate cells from g.pigs sensitized with killed avian type tubercle bacilli and with killed *Mycobact. johnei*, also pooled sera from the same groups of animals, were inoculated intraperitoneally into normal g.pigs. The recipient animals were tested 48 to 96 hours later for skin sensitivity to avian tuberculin and johnin P.P.D. In all four experiments passive transfer of skin sensitivity was obtained in a percentage of the recipient animals. The results were more clear-cut in the groups of g.pigs which had received cellular exudates from donors sensitized with *M. johnei*. The passively transferred skin sensitivity was of lower order than that obtained in the actively sensitized animals, and depended in degree on the volume of packed donor cells injected. The reactions to avian tuberculin and johnin P.P.D. were generally closely comparable in size.

Passive transfer of skin sensitivity by injection of sera from sensitized g.pigs was unsuccessful.—H. KONST.

WAYNE, L. G., KRASNOW, I. & HUPPERT, M. (1957). **Characterization of atypical mycobacteria and of nocardia species isolated from clinical specimens. I. Characterization of atypical mycobacteria by means of the microcolonial test.**—*Amer. Rev. Tuberc.* **76**, 451-467. [French and Spanish summaries.] **339**

HUPPERT, M., WAYNE, L. G. & JUAREZ, W. J. (1957). **Characterization of atypical mycobacteria and of nocardia species isolated from clinical specimens. II. Procedure for differentiating between acid-fast microorganisms.**—*Ibid.* 468-479. [French and Spanish summaries. Authors' summaries modified.] **340**

I. The microcolonial test for neutral red staining of mycobacteria grown on molecular filter membranes was applied to atypical mycobacteria isolated from clinical materials. The results were correlated with pigmentation, animal pathogenicity, and clinical source of the atypical mycobacteria. Apart from the criterion of the neutral red reaction, the organisms could



be classified into three main microcolonial morphological groups. Typical *Mycobact. tuberculosis* formed tight "cords," photochromogens produced intermediate "cording," and certain skotochromogens (producing pigment in the dark) and non-pigmented atypical mycobacteria produced disoriented "non-corded" colonies.

II. A number of tests were evaluated as screening procedures for typical *Mycobact. tuberculosis*, the atypical mycobacteria, the rapid-growing mycobacteria, and certain species of nocardia. The neutral red reaction as determined in the microcolonial test will separate the first two groups (neutral red positive) from the last two (neutral red negative). The typical *M. tuberculosis* and three groups of atypical mycobacteria can be differentiated on the basis of pigment production and of presence and degree of "cording" as determined in the microcolonial test. The nocardia species can be separated from the rapid-growing mycobacteria by using the slide-culture technique; the former develop multiple branching filaments, while the latter remain unbranched or have seldom more than a few short branches.

TOBIN, A. J., JR. & MORSE, E. V. (1957). The pathogenicity of *Corynebacterium pseudotuberculosis* for laboratory white mice. — *Cornell Vet.* 47, 413-418. [Authors' summary modified.] 341

Fifteen of 16 strains of *C. pseudotuberculosis* were pathogenic for mice and produced generalized infection after i/v inoculation, while 13 strains caused generalized infection on i/p inoculation. After s/c inoculation all the strains produced localized abscesses. Ten strains caused secondary lesions in internal organs. This difference in invasiveness indicated a means of delineating their virulence.

I GRAY, M. L. (1957). A rapid method for the detection of colonies of *Listeria monocytogenes*.—*Zbl. Bakt. I. (Orig.)* 169, 373-377. [In English. French, German, Spanish and Russian summaries. Author's summary modified.] 342

II. GRAY, M. L., STAFSETH, H. J. & THORP, F., JR. (1957). Colonial dissociation of *Listeria monocytogenes*.—*Ibid.* 378-392. [In English. French, German, Spanish and Russian summaries. Authors' summary modified.] 343

I. By means of a binocular scanning microscope and obliquely directed light it is possible to distinguish readily colonies of *Erysipelothrix (Listeria) monocytogenes* on tryptose agar plates. The colonies are round, slightly raised with a

finely textured surface, entire margin, bluish-green in colour, and watery in consistency. The need for maceration and possible refrigeration of suspected material before culture is stressed.

II. Twenty different colonial forms of *E. monocytogenes* were detected by the method described above. One was the naturally occurring smooth form isolated from infected human or animal tissue. This was characterized by a small, circular, slightly raised, finely textured, translucent, bluish-green colony. It gave rise either directly or indirectly to the 19 types designated as rough. These were characterized by a variety of colonial forms which differed in texture, consistency, configuration, opacity or colour from the smooth type. Only the smooth form, 2 intermediates and one rough form were pathogenic for rabbits when inoculated intravenously, subcutaneously or instilled into the conjunctival sac. However, non-pathogenic rough cultures produced monocytosis in rabbits exposed i/v or s/c. Six of the 19 rough types could be maintained in stable form. There were no indications that rough types reverted to smooth. In their fermentative and biochemical reactions the rough types were indistinguishable from the parent smooth type.

CRONIN, M. T. I. & MORAN, A. B. (1957). A note on the *in vitro* sensitivity to nitrofurans of *Listeria monocytogenes*. — *Vet. Med.* 52, 381-382. 344

"Furoxone" was the most active of 6 nitrofurans against 7 strains of *Erysipelothrix (Listeria) monocytogenes* isolated from the brains of affected cattle. It was bacteriostatic at concentrations of 1-2 mg. per 100 ml. and bactericidal at 2-3 mg. per 100 ml. The other 5 compounds were bacteriostatic at 3-9 mg. and bactericidal at 3-10 mg. per 100 ml.—M.G.G.

CARTER, G. R. (1957). A bacterin for the prevention of shipping fever in Canada.—*Vet. Med.* 52, 254-255. 345

A formalized vaccine consisting of *Pasteurella haemolytica* and *Past. septica* Type A in equal proportions appeared to control outbreaks of shipping fever in cattle. The cultures were of freshly isolated, capsulated organisms incubated for 6-8 hours, and were sterilized with not more than 0.25% of formalin. Two doses of 5 or 10 ml. were given a week apart.—M.G.G.

FRITZSCHE, K. (1956). Ein Beitrag zur experimentellen Übertragbarkeit der infektiösen Bronchitis des Rindes auf aerogenem Wege. [Experimental transmission of bovine infectious bronchitis by the airborne route.] — *Arch. exp. VetMed.* 10, 759-768. 346



Infectious bronchitis was produced in 3 out of 4 yearling cattle by intratracheal and intranasal administration of fresh lung material from natural cases of the disease. The incubation period was 4-6 days. Bipolar-staining bacteria were isolated in pure culture from the original material, but were not demonstrable in an animal which had recovered from an infection produced by germ-free filtrate. Fluid from infected lung which had been filtered through Seitz EK filters and stored at  $-25^{\circ}\text{C}$ . for 24 days was no longer infective for 2 experimental cattle. In the field, severe bronchopneumonia has been observed only in pregnant or recently calved animals; young cattle develop a transient form from which they soon recover.—M.G.G.

PATTISON, I. H., HOWELL, D. G. & ELLIOT, J. (1957). A *haemophilus*-like organism isolated from pig lung and the associated pneumonic lesions. — *J. comp. Path.* **67**, 320-330. [Authors' conclusions modified.] 347

A *Haemophilus*-like organism, not apparently identical with *H. influenzae-suis*, was isolated together with swine fever virus from a pneumonic pig lung. It was a small, Gram-negative, pleomorphic rod showing filamentous forms and evidence of capsulation. It was non-motile and catalase negative. Its colonial form was similar to *H. influenzae* and, like the latter, it showed satellitism when growing in association with *Staphylococcus aureus*. It did not, however, require factors X and V as described for *H. influenzae*, but did require a factor to be found in blood, serum, and commercial yeast extract. Intratracheal injection of cultures of the organism failed to cause disease in any of 7 pigs and the organism was not isolated from these animals when they were killed for examination 14 to 25 days after inoculation. Intratracheal injection of unfiltered material from the original lung, or of cultures of the organism together with swine fever virus, caused pneumonia and pleurisy in 7 of 10 pigs; the organism was recovered from all these lungs except the 3 not showing pleurisy. The pneumonia caused by intratracheal injection of swine fever virus alone was characterized microscopically by collapse, with a varying degree of cellular exudate. The pneumonia caused by intratracheal injection of swine fever virus plus the *Haemophilus*-like organism was characterized microscopically by the changes associated with swine fever virus plus a nodular lesion which is described in detail and was associated with the *Haemophilus*, and by extensive pleurisy.

NERMUT, M. V. (1957). L forms of bacteria and their role in the origin of penicillin resistance.—*Nature, Lond.* **179**, 379-380. 348

Investigation of the penicillin resistance of the secondary rods regenerated within the complete or incomplete L-cycle being of great importance in understanding the biological significance of L forms, experiments were made to determine, first, the resistance of the secondary rods regenerated from one large body and secondly, the amount of penicillin in broth culture in the time of regeneration of the bacillary form.

Using a strain of *Proteus*, secondary rods were obtained with a resistance to penicillin in accordance with that of the control culture in 37 cases, in 3 cases it was slightly higher and in 12 lower. The amount of penicillin was observed at regular intervals in a broth with 5000 units per ml. inoculated with 18-hour-old culture of *P. vulgaris*; after 24 hours the amount of penicillin was down to 0.03 units/ml. and the regeneration of the secondary rods took place in only about 24 hours or 12 hours after the decrease of penicillin to practically zero. N. concluded that no special significance can be attributed to the L forms in relation to the origin of the resistant strains of bacteria and that the regeneration of the secondary rods begins after a latent period, the amount of penicillin being reduced to a very low value 12 hours before. —E.V.L.

REES, T. A. (1957). The isolation of *Escherichia coli* O86,B7 and O103,B? from diseased calves. — *J. Path. Bact.* **74**, 441-444. [Author's summary modified.] 349

These two antigenic types of *E. coli*, previously known to occur in epidemic infantile gastro-enteritis only, have been isolated from white scours in calves.

GITTER, M. (1957). Haemolytic *Bact. coli* in the "bowel oedema" syndrome. I. An attempted investigation into the pathogenicity of the organism for experimental animals.—*Brit. vet. J.* **113**, 168-170. 350

Three mice were inoculated i/v with a 6½-hour peptone broth culture of haemolytic *Escherichia coli*, which had been isolated from the lung of a pig with oedema disease. They developed pronounced nervous symptoms and died within 18-24 hours. Haemolytic *E. coli* were recovered from all the internal organs. Three mice which were inoculated subcutaneously, intraperitoneally or intranasally remained healthy. A pig, which received i/v a mixture of a 6-hour and a 24-hour culture, was recum-



bent for 4 days, with fever, dyspnoea and anorexia, but it was normal on the tenth day. Identical experiments were made with a second strain isolated from the colon of a field case. Two of 3 mice inoculated i/v died after 24 and 36 hours, but no nervous symptoms were seen. I/v injection in a pig produced dullness, fever and anorexia. Both pigs were killed, but no lesions were found. A third strain, recovered from the organs of piglets with catarrhal enteritis, was lethal for mice when injected i/v, but i/p and s/c doses were harmless.—M.G.G.

GROSS, W. B. (1957). *Escherichia coli* infection of the chicken eye.—*Avian Diseases* 1, 36-41. [Author's conclusions modified.] 351

An experimentally produced panophthalmitis in association with severe *E. coli* bacteraemia is described. Infection was produced by inoculating broth cultures of certain types of *E. coli* alone or with egg-propagated PPLO into the lesser abdominal air sacs of chickens. The chief symptoms were blindness associated with hypopyon. The microscopic lesions consisted of an infiltration of the entire uveal tract by mononuclear phagocytes and heterophiles. This was accompanied by extensive oedema and hyperaemia of the choroid and iris. A heterophile-mononuclear exudate was present in the anterior chamber, and granulomas sometimes developed in the choroid, ciliary body, vitreous humour, or aqueous humour. Similar infections have been noted in field flocks.

HINSHAW, L. B. & BRADLEY, G. M. (1957). Alterations in kidney weight produced by *Escherichia coli* endotoxin.—*Amer. J. Physiol.* 189, 329-330. [Authors' summary modified.] 352

The rapid i/v inj. of the endotoxin in eviscerated anaesthetized dogs resulted in a sudden fall in kidney weight beginning 15-35 sec. after inj. and having maximum effect within 10-20 min. The loss in weight was probably caused by vasoconstriction.

CHANCE, H. L. (1957). Nuclear division in *Escherichia coli* as revealed by acid fuchsin.—*J. Bact.* 74, 67-70. [Author's summary modified.] 353

A stain consisting of 1 ml. of a 2% aq. soln. of acid fuchsin, 0.3 ml. of a 2% soln. of uranyl nitrate and 0.1 ml. of cerous nitrate was used to stain internal structures in *E. coli*. Though the overall pattern of cell division was that of the higher forms of life, chromosomes were not definitely identified unless the structure which seemingly divided longitudinally

could function as a chromosome. Some of the material suggested more than one pattern of division though further study may unite these into one sequence.

SHANNON, R. (1957). Colicine production as a method for typing *Bact. coli* O55 B5.—*J. med. Lab. Tech.* 14, 199-214. [Author's summary modified.] 354

A simple technique for the detection of colicine production and a rapid method of typing *Escherichia coli* O55 B5 by means of colicine production is described. 240 strains of *Esch. coli* O55 B5 were typed by this method and the results compared with those obtained by a study of the biochemical reactions and the distribution of strains of the various flagellar types.

WALDEN, N. B. (1957). An outbreak of acute salmonellosis in a thoroughbred stud.—*Aust. vet. J.* 33, 150. 355

Three deaths occurred. P.M. examination revealed acute enteritis in all three animals. A salmonella was isolated and heavy infestation of *Trichonema* larvae noted. A connexion between the infestation and infection is suggested. The control of parasitism by phenothiazine resulted in improved foals in the succeeding season, and there was no further mortality.—R. V. S. BAIN.

KLEIN, H. (1957). Salmonella manhattan in der Milch. [*S. manhattan* in milk.]—*Berl. Münch. tierärztl. Wschr.* 70, 313-314. 356

Lack of hygienic precautions in a dairy herd in which a cow had enteritis caused by *S. manhattan* led to contamination of the milk.—M.G.G.

STELLMACHER, W. (1957). Die Auswertung der Salmonellafunde des Jahres 1955. [*Salmonella* strains examined during 1955 at the Central Institute for Veterinary Vaccines in Berlin.]—*Berl. Münch. tierärztl. Wschr.* 70, 81-85. [English summary.] 357

In 1955, 2,843 salmonella strains, belonging to 34 types, were recovered from slaughter animals and a few other sources, compared with 2,250 in 1954. The rise was chiefly due to an increase in *S. cholerae-suis* and *S. cholerae-suis* var. *kunzendorf* infections—from 26 to 696. *S. dublin* predominated in the north of the region, but was rare in the south. The reason for this is not known.—M.G.G.

HOBSON, D. (1957). Chronic bacterial carriage in survivors of experimental mouse typhoid.—*J. Path. Bact.* 73, 399-410. [Author's summary modified.] 358



Mice inoculated with small numbers of *Salmonella typhi-murium* were observed under strict isolation. Mice frequently became chronic carriers after a single exposure to infection. Mice had no significant innate ability to suppress bacterial growth. All mice underwent a generalized infection; chronic carriers appeared to have been mice which acquired an ability to reverse the trend of the disease after the 14th day of infection.

The nature of the host-parasite relationship represented by the chronic carrier is discussed. Survivors of infection are significantly resistant to re-infection, though circulating O antibody titres are low; mice inoculated with heat-killed *S. typhi-murium* vaccine, which possessed somewhat higher titres of O antibody, were noticeably less resistant to infection.

I. DAIGELER, A. (1957). Über das Vorkommen von Salmonellen bei Hühnern. [**Occurrence of salmonella in fowls.**]—*Berl. Münch. tierärztl. Wschr.* 70, 305-307. [English summary.] 359

II. FEILS, G. (1957). Seltene Salmonella-Typen beim Geflügel unter Berücksichtigung der Pullorumuntersuchungen. [**Rare salmonella types in poultry.**]—*Ibid.* 308-311. [English summary.] 360

I. Apart from *S. gallinarum* and *S. pullorum*, 7 strains of *S. typhi-murium*, 2 of *S. montevideo*, and one each of *S. bredeney* and *S. panama* were isolated from the organs of 11 out of 250 fowls which had died. The sources of infection are considered to be food and water-fowl.

II. Four rare salmonella types were isolated from chicks and fowls—*S. bredeney*, *S. bareilly*, *S. infantis* and *S. binza*. *S. binza* was also found in faeces from a flock of ducks.—M.G.G.

HUDSON, C. B. & TUDOR, D. C. (1957). *Salmonella typhimurium* infection in feral birds. —*Cornell Vet.* 47, 394-395. 361

Between April 1954 and September 1956 *S. typhi-murium* was isolated in pure culture from 3 starlings, 6 sparrows, a cowbird (*Molothrus ater*) and 6 rusty blackbirds (*Agelaius phoeniceus*) in New Jersey.—M.G.G.

JAMESON, J. E. (1957). The value of the capillary test in screening quarter-samples for brucella culture.—*Mon. Bull. Minst. Hlth Lab. Serv.* 16, 205-207. [Author's summary modified.] 362

All of 173 quarter-milk samples, in which *Br. abortus* was demonstrated by culture, were positive to the capillary test, 171 of them

strongly positive. *Br. abortus* was not isolated from 1,832 samples which were negative or doubtful to the test. It is considered that this test is better than the ring test for screening quarter-samples.

ROTOV, I. V. (1957). [**Vaccine treatment of cattle with spontaneous brucellosis.**]—*Proc. Lenin Acad. agric. Sci.* 22, No. 6. pp. 41-43. [In Russian.] 363

Sixty-five cattle with chronic brucellosis were given a course of vaccine treatment. Three s/c injections of Strain 19 vaccine, the first of 5 ml., the second of 10 ml. and the third of 15 ml., were given at intervals of 10 days; a s/c dose of 5-10 g. of caffeine was given simultaneously with each injection. The whole treatment was repeated 3 months later. Both local reactions (large, painful swellings) and general reactions (a slight rise in temp., depression, and anorexia) were observed. Agglutination and c.f. titres rose abruptly, then gradually fell, but they became negative in only 11 cattle. Five of these were slaughtered; bacteriological examination of the organs was negative. Of the remaining 54, 12 aborted after the first month of treatment; *Br. abortus* was recovered from the foetuses of 4.—M.G.G.

PIVNYAK, I. G. (1957). [**Treatment with biomyacin (chlortetracycline) and immune serum of sheep experimentally infected with brucellosis.**]—*Veterinariya, Moscow* 34, No. 9. pp. 47-50. [In Russian.] 364

Thirteen susceptible sheep aged 1-2 years and weighing 40-50 kg. were each infected with 200 million organisms of virulent *Br. abortus* (6 conjunctivally and 7 subcutaneously). Four served as controls and the remainder were each given two courses of treatment. The first course lasted 6 days and consisted of six 1 g. doses of chlortetracycline given mixed with bran or as a drench and 2 × 8 ml. immune serum. The second course started 20-25 days after the end of the first and consisted of 2 × 700 mg. of chlortetracycline and 8 ml. serum, given over 3 days. The time at which treatment commenced was not stated, but was presumably soon after the 18th day after infection, because pre-treatment serological examinations were performed on that day. 8 of the 9 treated sheep were serologically negative 26 days after treatment commenced, and were bacteriologically negative when killed 46 days after infection.—R.M.

DIERNHOFER, K. (1957). Ist das frühere schweizerische System der Bangbekämpfung für Österreich zu empfehlen? [**Is adoption**



of the former Swiss method of control of brucellosis advisable in Austria?—*Wien. tierärztl. Mschr.* 44, 462-475. [English, French and Italian summaries.] 365

Eradication of *Brucella abortus* infection simply by the slaughter of cattle excreting the organism is considered a slow and unreliable method.—M.G.G.

ROEPKE, M. H., STILES, F. C., JR., WHITE, T. G. & DRIVER, F. C. (1957). A study of the whey plate agglutination test for brucellosis.—*J. Amer. vet. med. Ass.* 131, 170-173. 366

Of 204 cattle positive to the blood agglutination test for brucellosis, 53 were negative and 14 doubtful to the whey plate test. *Brucella* was isolated from the milk of 10 of the 53 negative and 6 of the 14 doubtful reactors. Milk from each of the 4 quarters of these 16 animals was examined by the milk plate test. Wide variations in titre were found; in some animals 3 of the quarters were negative, while the fourth had a high titre. This suggests that brucella agglutinins in the milk result from infection of the udder and not from agglutinins in the blood.—M.G.G.

DALE, H. E. & ENGLISH, J. E. (1957). Effect of brucellosis vaccination on rectal temperature and feed consumption of beef and dairy calves.—*Vet. Med.* 52, 477-480. [Authors' summary modified.] 367

Vaccination of 30 dairy and beef calves with Strain 19 of *Br. abortus* under controlled environmental conditions produced these systemic responses. Rectal temp. was 3° to 4°F. higher for 2 or 3 days and did not return to normal until about the fifth day after vaccination. The calves were listless for several days. Food consumption fell by about 30% on the third day and did not return to normal for about a week after vaccination.

JAMESON, J. E. (1957). A cup test for the rapid serological screening of guinea-pigs infected with *Brucella abortus*.—*Mon. Bull. Minist. Hlth Lab. Serv.* 16, 207-210. [Author's summary modified.] 368

A simple serological screening test for *Br. abortus* infection is described, to which 7,006 g.pigs were submitted 6 weeks after the inoculation of milk. In a preliminary trial with 1,100 animals, not one infected with *Br. abortus* was missed by this technique. In a later trial with 5,906 g.pigs tube agglutination and cultural tests were omitted for negative animals. This saved tests in 5,101 g.pigs. The technique was more sensitive than tube agglutination, though

for practical purposes it was equally specific. Spleen cultures were negative for 14% of g.pigs positive by either test. The probability of isolating *Br. abortus* from the spleen of an inoculated g.pig increased progressively with the titre of brucella agglutinins reached in the serum after 6 weeks.

NIŽNÁNSKY, F. & KRČMÉRY, V. (1956). L'activité des enzymes hydrolysantes des *Brucella* et son importance pour l'identification. [Hydrolytic enzymes of brucella and their value in typing cultures.]-*Arch. Inst. Pasteur Tunis* 33, 507-515. 369

A French version of a paper previously abstracted [*V.B.* 27, 2623].—R.M.

SUMMA, H. & BETHCKE, H. J. (1957). Die Schafbrucellose unter besonderer Berücksichtigung der fleischbeschaulichen Beurteilung. [The meat inspection aspect of ovine brucellosis.]-*Tierärztl. Umsch.* 12, 218-221. 370

Five employees of an abattoir developed brucellosis shortly after the slaughter of 400 infected sheep. It is considered that such sheep should not be accepted for slaughter.—M.G.G.

BUDDLE, M. B. (1957). Vaccination against *Brucella ovis* infection in sheep.—*N.Z. vet. J.* 5, 43-50. 371

Characteristically active and persistent infections were produced experimentally in unweaned ram lambs by i/v or s/c inoculation of suspensions of *Br. ovis* [see Buddle, 1956 (*V.B.* 27, 2004)]. Simultaneous s/c inoculation of *Br. abortus* Strain 19 vaccine and saline in oil adjuvant vaccines prepared from recently isolated strains of *Br. ovis* conferred highly significant immunity on rams exposed to natural infection or to experimental infections of varying severity. In one experiment *Br. ovis* adjuvant vaccine alone gave good protection against severe experimental infection. Immunized and non-immunized ewes mated with rams secreting of infection, the difference between the two groups not being statistically significant.

—H. SCOTT McTAGGART.

AIRAPETYAN, V. G., KHACHATRYAN, A. B. & POGOSYAN, A. A. (1957). [Survival of the tularaemia organism in frozen sheep carcasses.]-*J. Microbiol., Moscow* 28, No. 6, pp. 21-25. [In Russian.] 372

In sheep carcasses kept at -20°C., *Br. tularensis* survived for up to 120 days in parenchymatous organs and up to 60-75 days in muscle. Experimentally infected sheep harboured the organism for 15 days after infection:



the organism was only rarely isolated after this period. The bacteria were concentrated mainly in the parenchymatous organs. They were less common in lymph nodes and rarer in kidney and muscle.—R.M.

FISH, N. A. & GRINGER, I. (1957). A report on investigational studies of bovine leptospirosis in Ontario.—*Canad. J. comp. Med.* **21**, 267-275. [French summary.] 373

Field and laboratory studies on five herds are reported. Symptoms and severity of the disease varied considerably, the salient syndrome being abortion (herds A and B), drop in lactation (herd D), drop in lactation and abortion (herd E), acute illness and death in calves (herd C). Diagnosis was based on serological findings except in herd C where *L. pomona* was isolated from a calf. *L. pomona* was the serotype found in four herds and *L. sejroe* in the other (herd D). The source of the infection was not determined.—D. MITCHELL.

SAFAROV, K. M. (1957). [Treatment of leptospirosis in sheep.]—*Veterinariya, Moscow* **34**, No. 6, pp. 30-33. [In Russian.] 374

Hyperimmune serum, in small doses, together with symptomatic treatment, is recommended for leptospirosis in sheep. Large doses may be harmful. Of 258 sheep in the preliminary stage of the disease which were given serum, followed by a second dose about 2 days later, 215 recovered. But of 231 sheep treated when exhibiting clinical symptoms only 72 recovered. Chemotherapy was less effective. Of 76 sheep in the preliminary stage which were inoculated i/v with a combination of neoarsphenamine and hexamine 45 recovered. The dosage was 0.005-0.01 g. neoarsphenamine per kg. of body wt. and 1-2 g. hexamine per animal. Of 87 sheep treated in the preliminary stage of the disease with ammargen [a silver ammonium complex] 0.04 ml. per kg. body wt., 38 recovered. When these preparations were given to sheep with clin. symptoms only a few were cured.—M.G.G.

CUNNINGHAM, M. P., MCINTYRE, W. I. M. & IVES, J. C. J. (1957). The incidence of canine leptospirosis in Glasgow.—*Vet. Rec.* **69**, 903-906. [Authors' summary modified.] 375

Of 197 dogs 57 were positive for *L. canicola* and 12 for *L. icterohaemorrhagiae*. Four dogs had the same titre for both. No animal under 6 months old had a positive titre. The incidence of *L. canicola* infection increased with age to a maximum at 9 years; it was higher in males than

in females. High titres usually occurred in the lower age groups. There was no breed incidence.

KIRSCHNER, L., MAGUIRE, T. & BERTAUD, W. S. (1957). Further evidence of the antileptospiral effect of milk: electron microscopic studies.—*Brit. J. exp. Path.* **38**, 357-361. [Survey of paper (p. i.), modified.] 376

The authors described and illustrated with electron micrographs the morphological changes produced in leptospira by suspending them in milk. These disintegrative effects were observed within 45 min.: they were seen in each of three serotypes and in both virulent and avirulent organisms. The fact that leptospirosis is not spread by milk is attributed to this action of a factor in milk. Some morphological changes caused by immune serum are also described. [See also *V.B.* **26**, 2212.]

BROOKS, M. E., STERNE, M. & WARRACK, G. H. (1957). A re-assessment of the criteria used for type differentiation of *Clostridium perfringens*.—*J. Path. Bact.* **74**, 185-195. [Authors' summary slightly modified.] 377

Over 300 strains of *Cl. perfringens* from widely varying sources were examined for the production of soluble antigens. Although the classical patterns of antigen production in all six types were largely confirmed, well defined, homogeneous groups of strains, differing from the classical patterns, were identified within Types A, B and C. It is suggested that the strains at present constituting Type F are a similar aberrant group, and should be regarded as a subgroup of Type C. Type differentiation should be based strictly on the production of major lethal toxins.

A haemolytic effect other than that due to  $\alpha$ -,  $\beta$ - and  $\delta$ -toxins has been observed on blood-agar plates, but the factor or factors causing it have not been obtained in liquid media and the nature of the haemolysis is not known.

PERSONEUS, G. R., COOPER, M. S. & MARTINI, F. V. (1957). Studies on blackleg bacterins. I. Immunity tests in laboratory animals.—*Cornell Vet.* **47**, 361-371. [Authors' summary modified.] 378

An American and a Turkish strain of *Clostridium chauvoei* were of equal virulence for normal g. pigs, but in g. pigs immunized with killed vaccines prepared from these and other strains of the organism, the American strain was much more virulent. This is considered to be due to a difference in invasive power rather than an antigenic difference, since vaccines prepared



with strains from different parts of the world gave complete protection against the Turkish strain. A potency test in mice using a standard reference vaccine and standard challenge dose is described. A 50% protective dose is estimated by comparison of the dose-effect curves. This is a possible method for critical studies of *Cl. chauvoei* vaccines.

ELDER, J. M. & MILES, A. A. (1957). The action of the lethal toxins of gas-gangrene clostridia on capillary permeability.—*J. Path. Bact.* 74, 133-145. [Abst. from authors' summary.] 379

Partly purified toxic preparations of gas-gangrene clostridia contain factors which, injected intracutaneously in moderate doses, increase the permeability of small blood-vessels in the skin of the g. pig. Slightly larger doses produce haemorrhage and necrosis. Neutralization tests with antitoxic sera of known antibody content indicate that the main permeability factor in *Cl. welchii* Type A is the  $\alpha$ -toxin; in *Cl. oedematiens* Type B, the  $\alpha$ -toxin; and in *Cl. septicum*, the  $\alpha$ -toxin.

KELCH, F. (1957). Differenzierung von Clostridienarten aus Fleischkonserven. [Differentiation of clostridia from tinned meat.]—*Berl. Münch. tierärztl. Wschr.* 70, 113-115. [English summary.] 380

Clostridia from tinned meat were differentiated by their growth characteristics in liver broth and liver agar. In 73 infected samples 47 strains of *Cl. parasporogenes*, 15 of *Cl. bifermentans*, 9 of *Cl. welchii* and 2 of *Cl. butyricum* were identified.—M.G.G.

HITZMAN, D. O., HALVORSON, H. O. & UKITA, T. (1957). Requirements for production and germination of spores of anaerobic bacteria.—*J. Bact.* 74, 1-7. [Authors' summary modified.] 381

When *Clostridium roseum* was grown in a medium containing trypticase, 1.5%; NaCl, 0.5%;  $K_2HPO_4$ , 0.25%; and glucose, 0.2%, nearly complete sporulation was obtained in 48 hours. The anaerobic spores must be harvested to prevent germination, by cooling to 4°C. and centrifuging. The precipitated spores are washed with water until free from absorbed nutrients, and can then be stored in distilled water or phosphate buffer at room temp. They can be separated from any remaining vegetative cells by fractional centrifugation. When a mixture of 3 amino-acids: L-alanine, L-phenylalanine, and L-arginine, was added to a suspension of these spores in distilled water containing 0.05% sodium thioglycollate at pH

7-8, germination took place in 2-5 min. under anaerobic conditions. Germination was measured by determining the change in light transmission with a spectrophotometer. This change paralleled loss of resistance to heat and increased susceptibility to staining.

GUILLAUMIE, M., KRÉGUER, A. & GEOFFROY, M. (1957). Propriétés du sérum des chevaux soumis à des immunisations successives et à des saignées régulières. Persistence de l'effet produit par les premiers antigènes. [Properties of sera from horses submitted to a series of immunizations and bleedings. Persistence of the effect produced by the initial antigens.]—*Ann. Inst. Pasteur* 92, 212-230. [English summary modified.] 382

Different horses were immunized initially against *Cl. histolyticum* antigens, then against those of *Cl. septicum*, *welchii* or *oedematiens*.

Injections of *septicum* toxin were given exclusively to horses which produced very little *histolyticum* alpha antitoxin during the initial immunization. If these injections started 7 months or 46 months after the end of the initial immunization, they provoked in a few weeks a sharp increase of the anti-*histolyticum* alpha titre: the titre was then higher than the anti-*septicum* titre. Horses which produced much *histolyticum* alpha anti-toxin during this initial immunization (15 to 26 months) received afterwards injections of *welchii* toxoid. During this second immunization the titre of *histolyticum* alpha antitoxin decreased in the blood, first considerably, then slowly. The anti-collagenase beta titre decreased strongly during the first six-months after the *histolyticum* toxoid injections were stopped and more and more slowly afterwards. The intensity of residual anti-beta immunity was all the more pronounced as the horses had produced more anti-collagenase beta during the specific immunization.

DEDIÉ, K. (1957). Unsere gegenwärtige Lehrmeinung zur Vibriosis genitalis beim Rind. [Present views on *Vibrio fetus* infection in cattle.]—*Mh. VetMed.* 12, 49-52. 383

The presence of *V. fetus* infection can be suspected when over 50% of the cattle in a herd conceive only after 4-8 services. In chronically infected herds the number of infertile animals is lower or only heifers are affected. Of the animals that conceive, 5-10% will abort; retention of the placenta and weak calves will also be seen. Slight inflammation of the cervix and vagina, with a clear mucus, often develops a few days after service. Diagnosis is by serological tests of vaginal mucus and culture of



secretions and fresh foetal and placental material. In bulls the only sure means of diagnosis is insemination of clean heifers.—M.G.G.

ENSOR, C. R. (1957). **The Purua foot-rot eradication scheme.**—*N. Z. J. Agric.* **94**, 218-220. 384

Purua is an area of about 32 sq. miles, containing 22,000 sheep. First, wild goats in the area were exterminated. The sheep were examined in a wooden cradle, and after their feet had been pared and graded according to degree of infection, were walked through a foot bath containing formalin, of 10% concentration for infected and convalescent sheep, and 5% for healthy sheep. They were examined again after 3 weeks. Healthy sheep were treated first, and were not allowed to walk on ground contaminated by infected sheep. At the original examination in January to March 1955, 11% of the sheep were healthy, 48% doubtful and 41% infected. In October 1955, 71% were healthy, 12% doubtful and 17% infected.—M.G.G.

SINCLAIR, A. N. (1957). **Studies on contagious footrot of sheep.**—*Aust. vet. J.* **33**, 202-206. 385

In experiments involving 580 sheep infected with foot rot, two topical treatments with 10% wt./vol. chloramphenicol (Chloromycetin) in methylated spirits cured 76% of infected feet, and 10% dichlorophen in methylated spirits cured 60%. The infected feet were pared thoroughly before treatment. Treatment at fortnightly intervals was better than at monthly intervals. The addition of a wetting agent to dichlorophen or increasing the concentration to 20% did not increase its efficiency.

The proportion of feet remaining infected or becoming infected was much higher when the sheep were run on long pasture than on short pasture.—D. F. STEWART.

ELBERG, S. S., SCHNEIDER, P. & FONG, J. (1957). **Cross-immunity between *Brucella melitensis* and *Mycobacterium tuberculosis*. Intracellular behavior of *Brucella melitensis* in monocytes from vaccinated animals.**—*J. exp. Med.* **106**, 545-554. [Authors' summary modified.] 386

A non-specific element was demonstrated in the resistance of monocytes from immunized rabbits. Vaccination by B.C.G. or by an effective anti-brucellosis reagent induces protection in either case against both *Mycobact. tuberculosis* and *Br. melitensis* when studied by the monocyte culture method. The activity of the antiserum required to demonstrate the resistance of the monocyte is not affected when the agglu-

inating action of the anti-brucella rabbit serum is removed by absorption. The ability of the monocytes from specifically immunized rabbits to retard the growth of virulent brucella was demonstrated, not as an all-or-none phenomenon, but in the light of the unrestricted bacterial multiplication which occurs in monocytes from normal animals.

SILVERMAN, M. S., BOND, V. P., GREENMAN, V. & CHIN, P. H. (1957). **Bacteriological studies on mice exposed to supralethal doses of ionizing radiations. I. Radiation from a nuclear device.**—*Radiation Res.* **7**, 270-276. [Authors' summary modified.] 387

Mice exposed to supralethal doses of neutron or combined neutron and  $\gamma$ -radiation from a nuclear explosion died within 2 to 4½ days. 78% of the animals receiving only neutron radiation and 96% of those receiving the combined radiations showed evidence of infection by normal intestinal bacteria. Most animals were infected with two or more organisms. These studies suggest that, although the ability of the spleen to remove bacteria is not impaired, the organ is unable to destroy them. Hence, a bacteraemia eventually develops.

MADDY, K. T. (1957). **Ecological factors of the geographic distribution of *Coccidioides immitis*.**—*J. Amer. vet. med. Ass.* **130**, 475-476. 388

Coccidioidomycosis is common in man and animals in parts of the south-western U.S.A. because the fungus requires an arid or semi-arid climate, an alkaline soil, relative freedom from severe frosts, and a very hot season of several months followed by rain. In a study of 100 cases in dogs there were examples of sputum, urine and exudates rich in fungal spherules; the parasite may also occur in the faeces, the mycelial form growing on the surface of the stool a few days after it is passed. *C. immitis* was found in or around rodent holes in the Arizona desert.—E. G. WHITE.

MCCREA, M. R. & OSBORNE, A. D. (1957). **A case of "thrush" (candidiasis) in a piglet.**—*J. comp. Path.* **67**, 342-344. [Authors' conclusions modified.] 389

A case of "thrush," *Candida albicans* infection, occurring in a piglet being reared artificially is recorded and the pathology of the lesions is described and illustrated.

IRWIN, C. F. P. & RAC, R. (1957). **Cryptococcus infection in a horse.**—*Aust. vet. J.* **33**, 97-98. 390

A horse showing meningitic symptoms of



stiffness, muscle spasm, hyperaesthesia and an inability to eat or drink was found to have *Cryptococcus encephalitis*. Macroscopically extensive areas of the surface of the brain and meninges were studded with small white nodules. The histology was typical. The species was assumed to be *Cryptococcus neoformans*.

—L. C. LLOYD.

GENTLES, J. C. & O'SULLIVAN, J. G. (1957). **Correlation of human and animal ringworm in west of Scotland.**—*Brit. med. J.* Sept. 21st, 678-682. [Authors' summary and conclusions modified.] 391

The results are given of an investigation in the west of Scotland of 163 cases of human ringworm infection which were suspected to be of animal origin. Dermatophytes were cultured from 117 (72%) of the human patients, and the isolates were: *T. verrucosum*, 82; *T. mentagrophytes*, 15; *M. canis*, 12; *T. sulphureum*, 6; *T. rubrum*, 1; *M. audouini*, 1. From 78 (48%) suspected animals, cultures were obtained of: *T. verrucosum*, 71; *T. mentagrophytes*, 1; *M. canis*, 6.

On 42 (26%) occasions the same dermatophyte was cultured from the human and the suspected animal; on 5 (3%) a different zoophilic dermatophyte was isolated from each source; and in 8 (5%) instances the human infection was caused by an anthropophilic fungus. Cattle were the main animal reservoir of infection, and there were 78 (48%) confirmed cases. Only 7 (4%) human infections were traced to a small animal source. None of the human infections with *T. mentagrophytes* was found to originate from cattle.

MENGES, R. W., LOVE, G. J., SMITH, W. W. & GEORG, L. K. (1957). **Ringworm in wild animals in southwestern Georgia.**—*Amer. J. vet. Res.* 18, 672-677. 392

Dermatophytes were isolated from specimens of hair from 88 of 1,142 wild animals trapped in Georgia. Symptomless infection of wild rodents with *Trichophyton mentagrophytes* was common and may well give rise to human infections through contamination of farm premises and equipment. This fungus was not isolated from any of 439 soil samples. *Microsporum gypsum* (red variety) was mainly isolated from mice, and the typical variety of the fungus from 16 of 62 soil samples.—E. G. WHITE.

ANDLEIGH, H. S. (1957). **In vitro study of antifungal activity of pentamidine and stilbamidine.**—*Mycopathologia* 8, 135-137. [In English.] 393

Pentamidine in a concentration of 0.1 mg.

per ml. inhibited the growth of *Madurella mycetomi* isolated from cases of maduromycosis occurring in India. Stilbamidine was not effective. Clinical trials are in progress.

—E. G. WHITE.

ADLER, H. E., YAMAMOTO, R. & BERG, J. (1957). **Strain differences of pleuropneumonia-like organisms of avian origin.**—*Avian Diseases* 1, 19-26. [Authors' summary modified.] 394

At least two different serological and pathological types of pleuropneumonia-like organisms were present in chicken and turkey tissues. These two groups were primarily differentiated by agglutination and ammonium sulphate flocculation procedures.

KRAUS, H. (1957). Über den Keimgehalt verschiedener Streumittel und seine Bedeutung für die hygienische Milchgewinnung. [Bacteria and fungi in bedding materials and their significance for hygienic milking.]—*Dtsch. tierärztl. Wschr.* 64, 265-267 & 286-291. 395

A bacteriological examination was made of various bedding materials (oat straw, wood shavings, sawdust and peat) used in cowsheds, with special reference to casein-splitting bacteria and fungi of the types that withstand heat treatment. Peat was the most satisfactory material as judged by plates exposed in the cowshed. The importance of using clean straw in cowsheds is emphasized.—E. G. WHITE.

TRUEBLOOD, M. S., HOPWOOD, M. L., MORRISON, S. M. & HILL, H. J. (1957). **Metabolic behavior of bovine spermatozoa as influenced by bacteria.**—*J. Dairy Sci.* 40, 149-153. [Authors' summary modified.] 396

By using the Warburg microrespirometer to measure oxygen uptake it was shown that bovine seminal plasma has little or no metabolic activity. *Bacillus* or *Pseudomonas* organisms added to semen produced an oxygen uptake in 3 hours that was higher than that of whole semen alone or the combined uptake of seminal plasma plus either of the organisms. By adding fresh spermatozoa to filtrates of incubated bacteria plus semen it was shown that this increase was due to the ability of spermatozoa to utilize bacterial intermediate metabolites. Streptomycin had little or no effect on the metabolism of spermatozoa or *Pseudomonas* organisms but it inhibited the respiration of a *Bacillus* species.

OPPERMANN, R. A., NELSON, W. O. & BROWN, R. E. (1957). **In vitro studies on methan-**



ogenic rumen bacteria.—*J. Dairy Sci.* **40**, 779-788. [Authors' summary modified.] 397

Stabilized cultures which produced methane from formic or acetic acid at 15° to 45°C. were obtained from rumen fluid. Cultures utilizing butyric acid were established only at 45°C. Attempts to stabilize cultures on propionic acid were unsuccessful. Cultures fermenting both formic and acetic acid utilized the formic before the acetic acid. Those fermenting acetate were inhibited by carbon dioxide, dyes, and penicillin, whereas formate cultures were unaffected. A rumen organism isolated from formate medium was tentatively identified as *Methanobacterium*

See also abst. 643 (report, Netherlands).

### DISEASES CAUSED BY PROTOZOAN PARASITES

MARSBOOM, R. (1956). Epizootiological observations and contribution to the study of the treatment of bovine trypanosomiasis in the bush (Muhinga-Ngozi sector in Urundi).—Leopoldville: Bur. interafr. Tsé-Tsé. Publ. No. 209. pp. 16. 399

An attempt was made to reduce heavy losses of cattle from *T. vivax* and *T. congolense* infections by the use of chemotherapeutic drugs. Prophylactic injection of quinapyramine ("Antrycide") at intervals of 2 months reduced the average monthly number of new cases from 20 to about 2, but therapy with this drug or with ethidium bromide or dimidium bromide resulted in a large proportion of relapses. It was recognized that destruction of *Glossina morsitans* would be the only radical method of control.

—R.M.

READ, C. P. (1957). Comparative studies on the physiology of trichomonad protozoa.—*J. Parasit.* **43**, 385-394. [Abst. from author's summary.] 400

The utilization of various carbohydrates as energy sources for growth of *Trichomonas vaginalis* and *Tr. gallinae* was quantitatively compared. Gaseous fermentation of carbohydrates by *Tr. vaginalis* and *Tr. gallinae* was inhibited by fluoride, iodoacetate, dinitrophenol, and phenylmercuric acetate. *Tr. foetus* is not inhibited by fluoride at relatively high concentrations. Attempts to adapt *Tr. gallinae* to poorly utilized carbohydrates showed that after a single transfer the organism had an enhanced capacity for growth on galactose. However, after 48 transfers in sucrose media no enhancement of growth on this substrate was observed. Using a tetrazolium assay, oxidation of Krebs cycle intermediates was demonstrated in *Tr. gallinae* but not in *Tr. vaginalis*.

*formicicum*, and one from acetate medium resembled *Mb. sohngeni*, but differed in cellular arrangement.

SPLITTER, E. J. & CASTRO, E. R. (1957). Antibiotic therapy in acute eperythrozoonosis of swine.—*J. Amer. vet. med. Ass.* **131**, 293-294. [Authors' summary modified.] 398

Specific action against *Eperythrozoon suis* was obtained with single i/m doses of either oxytetracycline or tetracycline at the rate of 3 mg. per lb. body wt., or greater. The results were similar to those previously observed with single i/v doses of neoarsphenamine.

DZHILAVYAN, K. A. (1957). [Biomycin (chlortetracycline) in the control of coccidiosis of calves and chicks.]—*Veterinariya, Moscow* **34**, No. 7. pp. 68-70. [In Russian.] 401

Six calves, 1½–2 months old, quickly recovered from acute coccidiosis when given orally 20 mg. of chlortetracycline per kg. body wt. 2–3 times a day for 3–4 days. The drug rapidly controlled outbreaks in chickens. Chicks up to 30 days old should receive 3–4 mg. daily in the food or water for 3–4 days, older chicks 5–6 mg. After a lapse of 3 days the treatment should be repeated.—M.G.G.

CUCKLER, A. C., OTT, W. H. & FOGG, D. E. (1957). Factors in the evaluation of coccidiostats in poultry.—*Cornell Vet.* **47**, 400-412. 402

The authors consider some criteria which in their opinion should be used to assess the efficacy of a coccidiostatic drug, and on such a basis consider nicarbazine to be satisfactory.

—S. BRIAN KENDALL.

GODFREY, D. G. (1957). The influence of dietary cod liver oil and vitamin E upon *Babesia rodhaini* in mice.—*Exp. Parasit.* **6**, 465-485. [Abst. from author's summary.] 403

Multiplication of *B. rodhaini* was inhibited in mice given diets containing 5% cod-liver oil. Olive oil, maize oil, and cream had no effect. The unsaturated fatty acid fraction of cod-liver oil was the only fraction having this anti-parasitic activity. The activity was suppressed by large doses of vitamin E, given as  $\alpha$ -tocopheryl acetate, and by tetra-ethyl thiuram disulphide and ascorbic acid. No morphological abnormalities were seen in parasites from the blood of mice given diets containing cod-liver oil. It is suggested that the unsaturated fatty acids of the



cod-liver oil are oxidized by the host to peroxides. These create a pro-oxidant state which is inimical to the piroplasm. Vitamin E prevents peroxidation by virtue of its anti-oxidant properties. Several suggestions are also put forward for the anti-parasitic action of the peroxides.

MANWELL, R. D. (1957). **Blood parasitism in the English sparrow, with certain biological implications.**—*J. Parasit.* **43**, 428-433. [Author's summary and conclusions modified.] **404**

*Leucocytozoon*, although extremely frequent in most species of birds, is either very rare or perhaps does not occur in the house sparrow.

#### DISEASES CAUSED BY VIRUSES AND RICKETTSIA

PETERSON, K. (1957). **[Complications of foot and mouth disease and their prevention.]**—*Veterinariya, Moscow* **34**, No. 7. pp. 44-45. [In Russian.] **405**

In 169 cows with F. & M. disease the average Ca content of the blood was 1.8 mg.%, compared with 10 mg.% in 84 healthy cows. No complications were seen in 30 affected cows given calcium chloride with magnesium chloride and glucose i/v [doses not stated], whereas 10 of 36 untreated animals developed complications, such as abscesses, sterility, mastitis etc.

—M.G.G.

SEELEMANN, M. (1957). **The influence of foot and mouth disease on milk quality.**—*Dairy Sci. Abstr.* **19**, 522-530. **406**

The milk from mild cases is of almost normal composition, provided that there is no pronounced vesicle formation on the teats and no milk retention. In more severe cases there is a fall in yield, and the milk is similar in composition to that from cows being dried off. These changes are more pronounced when the cow also has mastitis. The milk is normal again 10-14 days after recovery from the disease. Vaccination produces negligible changes in milk composition.—M.G.G.

MELÉNDEZ V., L., GAGGERO C., A., RODRIGUEZ T., R. & NORAMBUENA G., M. (1957). **Multiplication of foot and mouth disease virus in adult kidney, and embryonic lung and heart bovine tissue cultures.**—*Proc. Soc. exp. Biol., N.Y.* **95**, 696-697. [Authors' summary modified.] **407**

F. & M. disease virus was propagated in bovine tissue cultures. When cultures of embryonic heart and lung tissue from cattle were

*Haemoproteus* also probably does not occur in this host in North America, and is evidently rare except in India. *Atoxoplasma*, formerly usually called "avian *Toxoplasma*", on the other hand, though widely distributed in birds, seems especially common in this species of sparrow. *T. gondii* has not yet been found, but the English sparrow is easily susceptible to experimental infection which often becomes chronic, just as it does in the pigeon. For this reason, and because of the close association of the English sparrow with man and species such as the pigeon in which naturally acquired toxoplasmosis is common, it should be regarded as at least a potential host.

inoculated with the virus, it was possible to collect virus at 6-hour intervals until 66 hours without great decrease of virus activity.

BACHRACH, H. L., BREESE, S. S., JR., CALLIS, J. J., HESS, W. R. & PATTY, R. E. (1957). **Inactivation of foot-and-mouth disease virus by pH and temperature changes and by formaldehyde.**—*Proc. Soc. exp. Biol., N.Y.* **95**, 147-152. **408**

Rates of inactivation of F. & M. disease virus A strain 119 at various pH levels were determined at 4°C. Below pH 4, the virus was totally destroyed in a few seconds, at pH 5 and 6 infectivity was lost at a rate of 90% per sec. and per min. respectively and at pH 6.5 and 10, 90% of the virus was inactivated in 14 hours. It was stable only at pH 7 and 7.5. Rates of thermal inactivation were examined at pH 7.5 and for 90% inactivation varied from 18 weeks at 4°C., 11 days at 20°, 21 hours at 37°, 1 hour at 49° to 3 sec. at 61°C. Virus treated with formaldehyde 0.009% was inactivated at the rate of 90% per day of storage at 4°C.—E.V.L.

KOMAROV, A. (1957). **Vaccination of cattle against F & M disease with egg vaccine.**—*Refuah vet.* **14**, No. 1. In Hebrew p. 36. [English p. 56.] **409**

F. & M. disease virus, type A, after 86 serial passages in day old chicks and 37 in chick embryos, lost its ability to produce F. & M. disease in cattle when inoculated i/d into the tongue. It was neutralized by type A immune serum, and serum from g. pigs immunized with this egg-adapted strain neutralized type A virus. Similar results were obtained with type O virus after 61 serial passages in day-old chicks and 35 in chick embryos.—M.G.G.



RÖHRER, H. (1957). Die Riemser Maul- und Klauenseuche-Konzentratvaccine. [**Concentrated foot and mouth disease vaccine prepared at Riems.**]—*Dtsch. tierärztl. Wschr.* 64, 69-70. 410

Concentrated F. & M. disease vaccine, furnishing an immunizing dose of 2 or 3 ml., was prepared by shaking vesicles from infected cattle in chloroform and centrifuging. In 1956 over a million cattle were immunized with this vaccine in Eastern Germany. The vaccine can be concentrated still further by treatment with acetone.

—M.G.G.

TOKUMARU, T. (1957). **Pseudorabies virus in tissue culture: differentiation of two distinct strains of virus by cytopathogenic pattern induced.**—*Proc. Soc. exp. Biol., N.Y.* 96, 55-60. [Author's summary modified.] 411

During the course of adaptation of egg-adapted Aujeszky's disease virus to tissue culture of monkey kidney cells, 2 types of cytopathogenic variations were found which appeared to be induced by 2 different strains of virus. One strain produced rounding degeneration, and the other cytolytic giant cell formation. Descriptions are given of the growth curve, plaque type in tissue culture, and infectivity for rats of these 2 strains.

NIKOLITCH, M. (1957). L'isolement du virus de la rage chez les chiroptères en Yougoslavie. [**Rabies in bats and moles in Yugoslavia.**]—*Bull. Off. int. Epiz.* 47, 506-517. 412

An atypical form of rabies, characterized by excessive docility, has been observed in isolated groups of cattle in the province of Vojvodina, North-East Yugoslavia. In 1954 rabies virus was demonstrated in the brains of 3 captured *Nyctalus noctula* bats [see *V.B.* 26, 3773]. In 1956 it was demonstrated in another bat of this species, and was also demonstrated, by intracerebral injection in mice, in the brains of 2 of 30 moles (*Talpa europaea*). Sixty field-mice (*Mus agrarius*) were negative (although 3 harboured the virus of lymphocytic choriomeningitis). It is suggested that moles and insectivorous bats acquire the virus from the larvae and adults of the burying beetle (*Necrophorus vespillo*), on which they feed. The larva of this beetle lives on carrion. Moreover, ectoparasites of the order *Gamius chleophratorum* are found both on bats and on these beetles. It is concluded that bats do not play a role in the epidemiology of rabies in Europe. The virus is passive and present only in the brain. [A

personal communication from Petzelt reports a 9% incidence of rabies in field-mice near Hanover.]—M.G.G.

PLACIDI, L. & CHEVRIER, L. (1957). Réaction du hériçon (*Oetechinus algiurus algiurus*) à l'inoculation du virus rabique et, notamment, de la souche Flury. [**Reaction of the North African hedgehog to the inoculation of rabies virus, including the Flury strain.**]—*Ann. Inst. Pasteur* 93, 489-501. [English summary modified.] 413

In North African hedgehogs (*Aetechinus algiurus*), fixed virus, street virus and the Flury strain induced paralysis, the incubation period being longer than in g. pigs and rabbits. The duration of the disease induced in g. pigs and rabbits by hedgehog-virus is most often increased, then, after a few transfers, the clinical course becomes normal again, without any repercussion on Negri-body formation or symptomatology. With the Flury strain, the most salient character is the irregularity of individual sensitivity, which is confirmed by the inoculation of hedgehog-virus into g. pigs; but the clinical and antigenic properties are not modified.

Although they were unable to confirm the disappearance of Negri bodies with the street virus and their reappearance with the other strains, the authors stress the interest of experimentation on hibernating animals. Some of their experiments seem to indicate the possible influence of a hormonal factor on the formation of Negri bodies; this factor would be effective through its activity on cell metabolism.

HABEL, K. (1957). **Rabies prophylaxis in man.**—*Publ. Hlth Rep., Wash.* 72, 667-673. 414

Experiments on groups of healthy volunteers showed the greater efficiency, as measured by antibody levels, of antirabies serum plus vaccine compared with vaccine alone. This was confirmed by the treatment of a number of persons severely bitten about the neck and head by a rabid wolf in Iran. Two doses of serum given 4 days apart with 21 daily doses of vaccine completely protected a group of 5 people; of a second group of 7 who received one dose of serum plus the vaccine, one died, while 3 of 5 receiving vaccine alone died from rabies. Serum antibody studies of the blood of these patients showed the presence of antibody both early and late in the course of treatment of the first 2 groups, but only in the late period of those receiving vaccine alone.

In attempts to reduce severe neurological reactions to rabies brain tissue vaccine, experi-



ments with man and in mice have shown that the number of doses may be safely reduced with proper spacing, and 2 new types of vaccine have been produced from avian embryos comparable to the current brain tissue vaccine.

—E.V.L.

REZVUIKH, A. I., SHKLYAEV, I. P. & KABAEV, K. (1957). [Treatment of the malignant form of goat pox.]—*Veterinariya, Moscow* 34, No. 6. pp. 33-34. [In Russian.] 415

Neoarsphenamine, in 5% aq. soln., was given i/v at the rate of 0.01 g./kg. body wt. to 8 goats in the initial stage of the disease and to 14 in which pock lesions had developed. A transitory toxic effect was observed, characterized by excitement and bleating. All except one of the goats recovered from the disease.

—M.G.G.

CHAMBERLAIN, R. W. & SUDIA, W. D. (1957).

**The North American arthropod-borne encephalitis viruses in *Culex tarsalis* Coquillett.**

—*Amer. J. Hyg.* 66, 151-159. [Abst. from authors' summary.] 416

The vector potential of lab. reared *C. tarsalis* mosquitoes for the viruses of western equine encephalitis, eastern equine encephalitis and St. Louis encephalitis was studied. The infection thresholds for all 3 viruses were very low. The transmission rates were 86%, 70% and 95% respectively. All 3 viruses were transmitted experimentally from bird to bird by the bite of *C. tarsalis*. It was proved that the western equine and St. Louis viruses multiply in *C. tarsalis*.

WOODRING, F. R. (1957). **Naturally occurring infection with equine encephalomyelitis virus in turkeys.**—*J. Amer. vet. med. Ass.* 130, 511-512. 417

Nervous symptoms, refusal to eat and drink, and complete leg paralysis followed by death were observed in a flock of turkeys. No gross lesions were found P.M. Samples of serum from 3 birds neutralized Western equine encephalomyelitis virus.—M.G.G.

WINN, J. F., PALMER, D. F. & KAPLAN, W. (1957). **Development and persistence of western equine encephalitis virus antibodies in experimentally infected pigeons.**—*Cornell Vet.* 47, 337-343. [Authors' summary modified.] 418

Pigeons developed high neutralizing antibody titres within 7 days after s/c inoculation with small doses of Western equine encephalitis virus. The titres persisted for at least 90 days. The demonstration of neutralizing antibodies is

a more practical method of assaying virus activity in an area than the isolation of the virus itself. The pigeon is a satisfactory monitor animal for the study of virus activity in endemic areas.

NITZSCHKE, E. & ROTT, R. (1957). **Züchtung des Virus der Bornaschen Krankheit im bebrüteten Hühnerei. [Cultivation of Borna disease virus in chick embryos.]**—*Berl. Münch. tierärztl. Wschr.* 70, 101-102. [English summary.] 419

Borna disease virus, after 8 alternate passages in chick embryos and in the brains of rabbits, underwent 6 consecutive passages in chick embryos. The embryos were inoculated on the chorion after 5 days of incubation.

—M.G.G.

HUCK, R. A. (1957). **Mucosal disease complex.**—*J. comp. Path.* 67, 267-276. [Author's conclusions modified.] 420

A mucosal disease causing high mortality in calves is described. Clinically there was high temp., mucoid nasal discharge, scour, and sometimes blood-stained faeces. P.M. the digestive tract usually showed lesions varying from a mild enteritis to a haemorrhagic enteritis with free blood in the lumen of the bowel. Haemorrhages occurred in the abomasum. Ulceration of the mouth was often present and in some cases extended into the pharynx and oesophagus. Lymph nodes were sometimes enlarged and showed perinodal oedema; bright red patches were often seen. When produced experimentally the disease was very mild with an incubation period of 6-10 days, followed by a high temp. lasting about 24 hours, which was often accompanied by a mucoid nasal discharge. A diphasic rise in temp. was observed in some cases. Lymph nodes were often enlarged. Scour and coughing were inconstant features. Ulceration of the oral mucosa occurred infrequently.

ROBERTS, S. J. (1957). **Winter dysentery in dairy cattle.**—*Cornell Vet.* 47, 372-388. [Author's summary modified.] 421

The literature on winter dysentery in dairy cattle is reviewed. Clinical observations made over a 3-year period are reported and discussed. Various treatments, including intestinal astringents, antiseptics, antibiotics, sulphonamides, arsenicals, and vaccines, are evaluated. Further bacteriological, therapeutic, and immunological studies are urgently needed.

HAWLEY, G. E. (1957). **Infectious rhinotracheitis.**—*Stwest. Vet.* 10, 197-203. 422

This is a disease of confined animals and in



several aspects resembles shipping fever, calf diphtheria, necrotic laryngitis, bovine malignant catarrh and virus diarrhoea, but distinguishing signs are severe dyspnoea and a stringy drooling with accumulations of dried exudates around the mouth. The reason for these signs is apparent at P.M. examination, the trachea being full of exudate which may extend as far as the bifurcation of the bronchi and may almost occlude the lumen. Morbidity ranges from 40% to 100% of a herd and mortality from 3% to 10% of affected animals. Treatment is difficult since the dyspnoea and rhinitis prevent an animal from eating or drinking without inhaling feed or water; 12 to 20 gal. of warm water should be pumped twice daily into the rumen through  $\frac{1}{4}$ -in. cannula with air vent. Laxatives are contra-indicated early in the disease; with onset of recovery animals respond well when given clean water and access to grass hays. All water tanks should be cleaned and treated with chlorine or iodine.—E.V.L.

McCLURE, T. J. (1957). A note recording the occurrence of bovine viral vaginitis in New Zealand.—*N. Z. vet. J.* 5, 69-70. 423

Samples of purulent cervico-vaginal mucus were collected from 6 herds of cows with a low fertility record. A filtrable virus obtained from this material produced vaginitis with a similar purulent cervico-vaginal mucus 48 hours after inoculation into the vagina of 2 yearling heifers; unfiltered material produced the same results in 5 other heifers. Failure to induce pregnancy in these experimentally infected animals suggested that the virus might be a cause of bovine infertility.—E.V.L.

ABDUSSALAM, M. (1957). Contagious pustular dermatitis, III, Experimental infection.—*J. comp. Path.* 67, 305-319. [Author's conclusions modified.] 424

The rabbit can be infected with contagious pustular dermatitis if a massive dose of the virus is applied on the scarified skin or inoculated intradermally. The infection can be serially transmitted. Because of its lower susceptibility, the rabbit is less suitable than the sheep as a test animal when the presence of the virus has to be detected, but is suitable for virus neutralization tests when the i/d route of infection is employed. Recovery from the experimental disease is followed by a partial resistance to re-infection which disappears in about 50 days.

The g.pig and the mouse are not susceptible to the virus when inoculated by the above routes. It was shown that in rabbits and g.pigs a skin reaction ascribed by Selbie [*V.B.* 15, 1194,

2359; 16, 2472] to the virus of C.P.D. was due to a ringworm fungus (*Trichophyton gypseum*) which occurred as a contaminant in experimental infection.

The virus causes a mild lesion on the chorio-allantois of 9 to 12-day chick embryos. The macroscopic and microscopic changes are described. The lesion regresses continually during serial passage in 12-day eggs and disappears by about the 4th generation.

FASTIER, L. B. (1957). Human infection with the virus of ovine contagious pustular dermatitis (scabby mouth).—*N. Z. med. J.* 56, 121-123. 425

A description of contagious pustular dermatitis in five people who had handled infective material from sheep in a laboratory.—E.G.

SIGURDSSON, B., PÁLSSON, P. H. & GRÍMSSON, H. (1957). Visna, a demyelinating transmissible disease of sheep.—*J. Neuropath.* 16, 389-403. [Authors' summary modified.] 426

"Visna" is a transmissible disease of sheep in Iceland which develops very slowly and affects the central nervous system. Pleocytosis in the cerebrospinal fluid (50-2,000 cells per cu.mm.) is the earliest sign of infection; it usually begins 1-3 months after intracerebral inoculation of infective material and persists for many months or even 1 or 2 years. A certain proportion of cases develop progressive paralysis, which may appear as late as 1 or 2 years after inoculation. In other cases pleocytosis regresses and the animals recover without having shown symptoms. The characteristic lesion in the brain and spinal cord in both natural and transmitted cases is demyelination. On one occasion the disease was reproduced by intracerebral inoculation of a Berkefeld N2 filtrate. It was stated that the disease differed clinically and histologically from "rida" (*V.B.* 25, 1995), which was probably scrapie.

OMORI, T., MORIMOTO, T., HARADA, K., INABA, Y., ISHII, S. & MATUMOTO, M. (1957). Miyagawanella: psittacosis-lympho-granuloma group of viruses, I. Excretion of goat pneumonia virus in feces.—*Jap. J. exp. Med.* 27, 131-143. [Authors' summary modified.] 427

In the epidemiology of virus pneumonia in goats it is of great importance to know the routes by which the virus leaves infected hosts. In the present study it was found that the virus was excreted in faeces from apparently healthy goats in the endemic areas. The incidence of faecal carriers was very high and the amount



of the virus excreted in faeces was very large. Excretion of the virus persisted for a relatively long period. Faecal carriers were readily found among goats negative to the complement-fixation test for the virus as well as those with a positive c.f. reaction. Study of the distribution of the virus in infected hosts indicated that the major source of the virus excreted in faeces was the virus which had multiplied in the mucous membrane of the intestines. The virus in faeces could maintain its activity for a relatively long period. The faecal virus heavily contaminates the environment and was readily isolated from dusts collected from the body surface of infected goats and from their pens.

LARSKI, Z., BIELESZ, P. & SURY, A. (1957). Badanie wpływu żywienia na wrażliwość na zakażenie wirusem choroby cieszyńskiej świń. [**Influence of diet on susceptibility to Teschen disease in pigs.**]—*Méd. vét., Varsovie* **13**, 399-402. [In Polish. English and Russian summaries.] **428**

In experiments with 31 piglets the diets fed were as follows: (1) low in proteins and deficient in calcium with a Ca:P ratio of 1:2; (2) containing adequate proteins and calcium and with a Ca:P ratio of 1:1.5. Two tests were made: in the first, the poorly fed pigs appeared to be more susceptible to infection with the virus (injected in dilutions  $10^{-1}$  to  $10^{-3}$ ) but when the experiment was repeated no difference in susceptibility was found between the poorly fed and the well fed pigs.—M. GITTER.

KÖTSCHKE, W. (1956). Skelett- und Herzmuskelveränderungen bei der Poliomyelitis des Schweines. [**Changes of the skeletal and cardiac muscle in porcine poliomyelitis.**]—*Arch. exp. VetMed.* **10**, 738-748. **429**

Selected muscles from 75 pigs with Teschen disease were examined histologically. Degenerative and inflammatory changes were found in about half the animals and occurred mainly in skeletal muscle, principally the diaphragm; they were less common in muscle from the hind limbs. The changes were believed to be the result of damage to the central nervous system by the virus.—R.M.

HOLBROOK, A. A. & PATTERSON, W. C. (1957). **The use of chickens in the differential diagnosis of vesicular exanthema and vesicular stomatitis. A preliminary report.**—*J. Amer. vet. med. Ass.* **131**, 196-197. **430**

Vesicles developed on fowls' tongues 24 hours after i/d inoculation into this organ of

vesicular stomatitis virus, of Indiana or New Jersey type. Vesicular exanthema virus did not produce lesions.—M.G.G.

OTT, R. L., GORHAM, J. R. & GUTIERREZ, J. C. (1957). **Distemper in dogs. II. The response to vaccination.**—*Amer. J. vet. Res.* **18**, 375-381. **431**

Ten puppies, 6-10 weeks old, and 4 foxes, 3-11 months old, were vaccinated s/c with living, egg-adapted distemper virus. Neutralization titres rose for 4-6 weeks, then gradually declined. The foxes resisted intracerebral infection with virulent virus  $7\frac{1}{2}$  or 21 months later.

Three puppies, that were vaccinated with egg-adapted virus at 6, 7, or 10 weeks of age, remained healthy when they were exposed to contact infection after 90, 56, and 112 days respectively. Their antibody titres were slightly higher 3 months after exposure than they were before exposure, whereas in 3 vaccinated puppies that were not exposed the titres declined.

The puppies of a hyperimmunized bitch resisted exposure to contact infection at 14 days of age and to intracerebral infection  $4\frac{1}{2}$  months later. Puppies of 4 non-hyperimmunized bitches could be immunized as early as 14 days of age, but most of those born to 4 hyperimmunized bitches were refractory to vaccination up to 42 days of age.—M.G.G.

FASTIER, L. B. (1957). **Studies on the haemagglutinin of infectious canine hepatitis virus.**—*J. Immunol.* **78**, 413-418. [Author's summary modified.] **432**

Under specific conditions of temperature and of pH the virus of infectious canine hepatitis enters into a reversible association with fowl r.b.c. By adsorption with these cells both the haemagglutinin and infective particle could be removed from tissue culture fluids containing the virus without appreciably reducing their ability to act as efficient c.f. antigens. Variations both in susceptibility to heat and to precipitability with methanol also suggested that a closer association may exist between haemagglutinin and the virus particle than with the c.f. antigen. Certain observations upon the growth of the virus in dog kidney epithelial cell monolayer cultures in relationship to the production of haemagglutinin and c.f. antigen were recorded.

FIELDSTEEL, A. H. & YOSHIHARA, G. M. (1957). **Propagation of infectious canine hepatitis virus in cultures of pig and ferret kidney.—**



*Proc. Soc. exp. Biol., N.Y.* **95**, 683-686.  
[Authors' summary modified.] **433**

The virus, hitherto considered to be highly host specific, was propagated in primary cultures of ferret kidney and in continuous cultures of pig kidney, its multiplication being accompanied by distinctive cytological changes. The virus was identified by neutralization tests with specific antiserum.

KANTOROVICH, R. A. (1957). [Aetiology of "dikovaniya" disease of animals in the Arctic region. III. Serological and antigenic properties of the virus.]—*Voprosui Virusologii* **2**, 208-210. [In Russian. English summary.] **434**

Two strains of a virus isolated from an encephalomyelitis of silver foxes and arctic foxes, known as "dikovaniya" disease, were serologically identical with rabies virus; they differed from the virus of fox encephalitis.

—R.M.

MYKYTOWYCZ, R. (1957). The transmission of myxomatosis by *Simulium melatum* Wharton (Diptera: Simuliidae).—*C.S.I.R.O. Wildl. Res. Aust.* **2**, 1-4. **435**

Experimental evidence is presented which indicated that *S. melatum* was a vector of myxomatosis in part of an area affected by an epidemic. The peculiar ear symptoms associated with transmission by this vector are described.

—M. D. MURRAY.

NOYES, W. F. & MELLORS, R. C. (1957). Fluorescent antibody detection of the antigens of the Shope papilloma virus in papillomas of the wild and domestic rabbit.—*J. exp. Med.* **106**, 555-562. [Authors' summary and conclusions modified.] **436**

In the wild rabbit papillomas the viral antigens occurred exclusively in the nucleus and were present in the differentiating cells of the keratohyaline layers and in the keratinized layers, but not in the deeper proliferating epithelial cells of the papillomas. They were present in very minute amounts in papillomas of the domestic rabbit, and were detected only in the superficial keratinized layers. It is postulated that virus is present in the nuclei of the proliferating cells of the papillomas of the wild and domestic rabbit but exists there in an early stage of development, consisting mainly of nucleic acid and deficient in protein, therefore non-antigenic and not demonstrable by fluorescent antibody. The nucleic acid moiety of the virus may be infective, and the protein component may provide immunological specificity and serve to preserve transmissibility. The protein-deficient virus can be referred to as masked virus.

KAUKER, E. & SIEGERT, R. (1957). Newcastle-virus-Infektion beim afrikanischen Strauss (*Struthio camelus* L.), Zwerggänsegeier (*Pseudogyps africanus* Salvad.) und Buntukan (*Ramphastos dicolorus* L.). [Newcastle disease in ostriches, vultures and toucans in a zoological garden.]—*Mh. Tierheilk.* **9**, 64-68. **437**

An outbreak of Newcastle disease in a zoological garden [see *V.B.* **26**, 1644] was followed 18 months later by a second outbreak. The virus was isolated from 2 ostriches, a vulture, and a toucan.—M.G.G.

TOPOLNIK, E. (1957). Dokaz virusa atipične kuge peradi u očnojtekucini kokoši pomoću pokusa hemaglutinacije. [Demonstration by the haemagglutination test of Newcastle disease virus in aqueous humour of fowls.]—*Vet. Arhiv.* **27**, 33-35. [In Croat. English and French summaries.] **438**

T. described haemagglutination tests with aqueous humour from 40 chicks aged 3 months, all of which died following experimental infection with Newcastle disease virus. Of these 24 yielded positive titres. The virus was also isolated from six of 80 fowls which had died from various causes. Of the six only two yielded positive aqueous humour haemagglutination reactions. Positive reactions were, however, also obtained with aqueous humour from six other fowls in which the virus was not demonstrable.

—E.G.

BALUDA, M. A. (1957). Homologous interference by ultraviolet-inactivated Newcastle disease virus.—*Virology* **4**, 72-96. [Author's summary modified.] **439**

Ultraviolet-inactivated particles of Newcastle disease virus excluded, within 6 min, homologous active virus in all the cells to which they had been adsorbed. However, in a fraction of the cells interference was overcome; these cells become yielders of new virus with a small probability per super-infecting active particle. Antiserum prevented interference when added up to 28 min. after irradiated virus; when added later only 50% of the cells became producers of virus. Resistance to infection disappeared 26-60 hours after interference had been induced; the cells then behaved normally. A cell from which interference was removed by super-infection with active virus had to be infected a second time in order to yield progeny virus. The results suggest that this type of interference occurs at the cell surface. The quantitative aspects of the phenomenon are discussed.



KOHN, A. & GOLDWASSER, R. (1957). **Multiplication of Newcastle disease virus in chick embryo tissue culture.**—*Proc. Soc. exp. Biol., N.Y.* **96**, 198-200. [Authors' summary modified.] **440**

The multiplication of a cytopathogenic strain of Newcastle disease virus in monolayers of chick embryo cells was studied. The latent period in the growth cycle of the virus lasted 8-9½ hours, followed by a period of rise in titre lasting 3-4½ hours. The average yield of virus per cell in the tissue culture was about 300 particles.

HITCHNER, S. B. & WHITE, P. G. (1956). **An immunological study of various modifications of a vaccination program for Newcastle disease and infectious bronchitis.**—*Amer. sci. Lab. Res. Rep.* No. 3. pp. 19. **441**

When chicks aged 3 days were given in the drinking water a combined vaccine against infectious bronchitis and Newcastle disease, the best time for re-immunizing with N.D. vaccine (administered in aerosol form) was after an interval of 3-4 weeks. Immunization or re-immunization with combined vaccine in aerosol form of birds aged 16 weeks, and its effect on egg laying, was studied; also the risk of infection of non-immunized birds by contact with immunized birds.—R.M.

BANKOWSKI, R. A. (1957). **A modified live Newcastle disease virus vaccine.**—*Proc. Soc. exp. Biol., N.Y.* **96**, 114-118. [Author's summary modified.] **442**

Newcastle disease virus was modified by serial passage of the California 11914 strain through tissue cultures using minced chick embryos suspended in Simm-Sanders medium. The modified virus was given i/m to over 20,000 chickens of all ages without producing any nervous or respiratory symptoms, but conferred an immunity as demonstrated serologically and by i/m challenge with a virulent strain of ND virus. One dose of the vaccine given to susceptible chicks at 5 days of age or over induced an immunity lasting at least 12 weeks. Two doses from 7 to 9 weeks apart resulted in a high degree of immunity which was still evident 33 weeks later. When administered to 2 flocks of chickens, one in the acute stage of infectious bronchitis and the other with chronic respiratory disease, the virus did not apparently increase the severity of the respiratory disease condition. Repeated trials showed that vaccinated chickens did not transmit the infection to unvaccinated susceptible birds within the same pen during 33 weeks. The modified virus can be propagated on HeLa cells to produce a vaccine for poultry,

so avoiding the introduction of egg-borne infections to poultry flocks through vaccines produced in embryonated eggs.

WINTERFIELD, R. W. & SEADALE, E. H. (1957). **Newcastle disease immunization studies. II. The immune response of chickens vaccinated with B1 Newcastle disease virus administered through the drinking water. III. The immune response of chickens vaccinated at an early age with B1 Newcastle disease virus administered through drinking water under field conditions.**—*Poult. Sci.* **36**, 54-64 & 65-70. **443**

I. Three different vaccines prepared from the B1 strain of Newcastle disease virus were studied for their immunizing ability when administered to chickens in the drinking water. The vaccines before and after mixing with the drinking water were titrated in 10-day-old chick embryos and the embryo infective dose<sub>50</sub> (e.i.d.<sub>50</sub>) per ml. determined. The data suggested that the immunity produced may be similar to that produced by ocular administration provided from  $8.0 \times 10^5$  to  $1.8 \times 10^7$  e.i.d.<sub>50</sub> were imbibed per chick. The vaccine preparation to be added to drinking water must therefore be very concentrated if an adequate immunizing dose is to be imbibed by the chicks. The vaccine to be satisfactory must have a minimum titre of  $10^{-7}$  per ml. Chicks aged 4½ weeks gave a better serological response than those aged 4 days.

II. Vaccine was given, *via* the drinking water, to 12 flocks of 31,300 chicks, the progeny of fowls vaccinated against Newcastle disease. Many did not develop serum neutralization titres when dosed between the ages of 4 days and 2 weeks. Serological responses were better in chicks vaccinated when 3 weeks old. Many of the birds given 2 doses, one at the age of 4 days and the second at 4½ weeks, did not develop satisfactory antibody titres.—M.G.G.

ADAMS, J. M. & IMAGAWA, D. T. (1957). **Immunological relationship between measles and distemper viruses.**—*Proc. Soc. exp. Biol., N.Y.* **96**, 240-244. [Authors' summary slightly modified.] **444**

In tissue culture studies, the Edmonston strain of measles virus was neutralized by distemper antiserum prepared in ferrets with the egg-adapted and mouse-adapted strains of distemper virus. All normal ferret sera failed to show any neutralization of measles virus. In animal studies, ferrets immunized with measles virus and subsequently challenged with virulent distemper virus showed some evidence of pro-



tection as revealed by prolonged incubation periods, modified illnesses and survivals. The mouse-adapted distemper virus was completely neutralized by measles antiserum prepared in ferrets, whereas normal serum failed to show any neutralization. Mouse-adapted distemper virus was also neutralized by human measles convalescent sera. These results suggest that common antigenic components are shared by the viruses of measles and distemper.

MANSI, W. (1957). **The study of some viruses by the plate gel diffusion precipitin test.**—*J. comp. Path.* **67**, 297-303. [Author's conclusions modified.] **445**

A modified technique using Ouchterlony's gel diffusion precipitin test is described. Some virus-antigen antibody reactions are recorded. The viruses under study produced specific precipitin reactions, which varied in their nature, sharpness, number of lines, and time of appearance. There were no cross reactions except between myxoma and fibroma viruses. Because of its simplicity and distinct results this method will be of great value in studying antigen/antibody reaction in many virus diseases.

I. ISAACS, A. & LINDENMANN, J. (1957). **Virus interference. I. The interferon.**—*Proc. roy. Soc. Ser. B.* **174**, 258-267. **446**

II. ISAACS, A., LINDENMANN, J. & VALENTINE, R. C. (1957). **Virus interference. II. Some properties of interferon.**—*Ibid.* 268-273. [Authors' summaries modified.] **447**

I. During a study of the interference produced by heat-inactivated influenza virus with the growth of live virus in fragments of chick chorio-allantoic membrane it was found that following incubation of heated virus with membrane a new factor was released. This factor, recognized by its ability to induce interference in fresh pieces of chorio-allantoic membrane, was named interferon.

II. Interferon could be titrated by the amount of interference induced in fragments of chorio-allantoic membranes challenged with influenza virus. It was stable at 2°C. for 2 weeks. Marked inactivation took place after 1 hour at 60°C. Interferon was held back by gradocol filters of 0.6  $\mu$  average pore diam. It was active against influenza, Sendai, Newcastle disease and vaccinia viruses.

LINDENMANN, J., BURKE, D. C. & ISAACS, A. (1957). **Studies on the production, mode of action and properties of interferon.**—*Brit. J. exp. Path.* **38**, 551-562. [Authors' summary modified.] **448**

Experimental conditions for preparing interferon in bulk are described. Interferon was produced in similar amounts when heated influenza virus was inoculated on either the allantoic or chorionic surfaces of the chick chorio-allantoic membrane. Membranes which had produced interferon and which were shown to be unable to support the growth of influenza virus nevertheless produced a second crop of interferon when incubated a second time with heated influenza virus. Influenza virus inactivated by ultraviolet light gave rise to more potent preparations of interferon than virus inactivated by heat. In these and in other experiments a correspondence was noted between the degree of interference induced and the amount of interferon liberated.

In addition to its action *in vitro*, interferon inhibited the development of pocks by vaccinia in the skin of rabbits.

Interferon was partly destroyed on incubation with crystalline trypsin.

I. BEKTEMIROV, T. A., TELENKOV, P. F., KISLITSINA, L. I. & GRITSENKO, A. K. (1957). **[Q fever in the Chitinsk oblast.]**—*J. Microbiol., Moscow* **28**, No. 6, pp. 25-28. [In Russian.] **449**

II. ROMANOVA, V. P. *et al.* (1957). **[Q fever in the Kamensk oblast.]**—*Ibid.* pp. 29-33. [In Russian.] **450**

III. FEDEROVA, N. I. *et al.* (1957). **[Q fever in Dagestan.]**—*Ibid.* pp. 36-39. [In Russian.] **451**

IV. ZUBKOVA, R. I., OKUNEVA, L. E. & PATSKO, L. V. (1957). **[Q fever in the Buryat-Mongol A.S.S.R.]**—*Ibid.* pp. 39-43. [In Russian.] **452**

I. Complement-fixation tests on serum were positive in 6.6% of 259 sheep and 0.9% of 96 cattle in the Chitinsk oblast (Transbaikal region).

II. An outbreak of Q fever in human beings (including 5 veterinarians and 7 shepherds) was traced to sheep. Heavy losses of ewes and new-born lambs were attributed to Q fever. Serum from 14 of 75 ewes gave positive c.f. tests.

III. A serological survey of workers in the meat and milk industries was reported. Cattle were apparently the main source of infection in Dagestan: serum from 8% of 133 cattle contained Q fever antibodies. It was found that *Boophilus calcaratus*, *Rhipicephalus bursa* and *Hyalomma plumbeum* carried *R. burneti*.

IV. Q fever antibodies were detected in 4.3% of sera from 436 cows and 4% of sera from 127 sheep in the Buryat-Mongol Republic.

—R.M.

TARASEVICH, I. V. (1957). [A study of experimental Q fever in *Hyalomma plumbeum plumbeum*.]—*J. Microbiol., Moscow* **28**, No. 6. pp. 45-51. [In Russian.] 453

Ticks were infected by inoculation with 0.01-0.03 ml. of infective yolk sac suspension. The organism was first seen in smears of haemolymph, intestine, salivary glands and ovary 3 days after infection, and it was still present at the 25th day (end of observation period). It appeared to be disseminated within the tick body by amoeboid haemocytes. Infection did not appear to affect the ticks.—R.M.

SILICH, V. A. (1957). [Survival of *Rickettsia burneti* in conserved meat.]—*J. Microbiol., Moscow* **28**, No. 6. pp. 43-45. [In Russian.] 454

Experiments were performed with the carcasses of g. pigs killed at the height of infection with *R. burneti*. The organism survived for 30 days in carcasses kept in an ice-box at 4°C., and for at least 150 days in carcasses kept in 10% saline.—R.M.

ABINANTI, F. R. & MARMION, B. P. (1957). Protective or neutralizing antibody in Q fever. —*Amer. J. Hyg.* **66**, 173-195. [Abst. from authors' summary.] 455

See also abst. 643 (report, Netherlands).

## IMMUNITY

LAMANNA, C. (1957). Adhesion of foreign particles to particulate antigens in the presence of antibody and complement (serological adhesion).—*Bact. Rev.* **21**, 30-45. 457

A comprehensive and interesting review of a serological reaction which has received little attention during recent years. Levaditi, in 1901, was probably the first to observe the adhesion of platelets to bacteria in the presence of specific antibody. There was little further interest until 1917, when Rieckenberg developed a test for trypanosomiasis based on this phenomenon. Subsequently several protozoa, spirochaetes, leptospira, eubacteria and a species of filaria were reported to give the adhesion reaction. Complement was an essential factor interacting in the antigen-antibody system rather than on the indicator particle. Since adhesion appeared to be produced in natural infections the *in vivo* significance of the phenomenon is discussed.

—A. E. PIERCE.

CLARINGBOLD, P. J., SOBEY, W. R. & ADAMS, K. M. (1957). Inheritance of antibody response. III. Heritability of response to sheep

Semi-purified suspensions of the spleens of mice inoculated with *Rickettsia burneti* gave a specific complement-fixing reaction with immune rabbit sera containing antibody to one of the major antigens of the rickettsia, the phase I antigen. When immune sera were mixed and incubated with the rickettsia before inoculation of the mice the titre of c.f. antigen in the spleen suspensions was much reduced. This reduction of c.f. antigen titre was used to measure the protective potency of various types of Q fever immune sera. The protective effect was strongest with sera containing antibody against the phase I antigen and least with sera containing antibody against the phase II antigen.

HEISCH, R. B. (1957). *Rickettsiae* from ticks and rodents in Kenya.—*Trans. R. Soc. trop. Med. Hyg.* **51**, 287. 456

Tick typhus is endemic in the Nairobi area. *Rickettsia* has been isolated from *Haemaphysalis leachi*, *Rhipicephalus simus* and *Amblyomma variegatum* which all occur on dogs. Nairobi dogs often give positive Weil-Felix reactions. *Rickettsia* isolated from wild rodents was of the *R. conori* type; *R. mooseri* was not encountered.—E.V.L.

red cells.—*Aust. J. biol. Sci.* **10**, 367-373. [Authors' summary modified.] 458

The heritability of antibody response to a priming dose of sheep r.b.c is  $41.8 \pm 19.4\%$  and to a secondary dose  $-7.4 \pm 20.7\%$ . With this antigen it would appear that the factors governing response to a priming dose are considerably different from those governing response to a secondary dose. It is stressed that adoption of a block replicated experimental design with this experimental material results in considerable gains in precision of experimentation.

BOERMA, F. W. (1956). Quantitative observations on antigen-antibody systems reacting in an agar gel.—*J. Path. Bact.* **72**, 515-518. 459

The reaction of excelsin, an antigen prepared from the seeds of *Bertholletia excelsa*, and diphtheria toxoid, against their respective antisera was examined by a column agar-gel diffusion technique. When the tubes were incubated at 22°C. for 1-3 weeks precipitation lines in the central agar column which divided the two reactants broadened downwards or upwards according as to whether excess of antigen or



antibody was present. When a narrow line formed which remained fixed in position and unchanged in appearance the antigen and antibody were present in equivalent concentrations. Flocculation tests with the excelsin-anti-excelsin system were in agreement with the agar-gel test. The diphtheria toxoid-antitoxin system showed some discrepancy in that more toxoid was required to obtain initial flocculation than for the production of a thin fixed diffusion line. However the agreement was closer between the line test and the Römer g. pig skin test than between the flocculation and skin test.

—A. E. PIERCE.

STEVENS, K. M. & MCKENNA, J. M. (1957).

**Antibody production in a completely *in vitro* system.**—*Nature, Lond.* **179**, 870-871. 460

Albino rabbits were injected i/v with *S. typhi* endotoxin to enhance their production of antibody. 24 hours later the spleens were removed and diced and half were incubated in a medium containing 500 µg./ml. bovine γ-globulin, and the other half with casein. Other spleens were incubated without exposure to foreign protein. After one hour at 37°C. the tissue was washed and placed on sterile tantalum gauze for 3 days. Using Boyden's haemagglutination technique, cells sensitized to bovine γ-globulin were agglutinated at considerably higher titres by extracts from the tissues incubated with this antigen, than those incubated with casein or without foreign protein. There was little change in titre over the 3-day period. Neutralization using the homologous antigen was specific, and the titres remaining after neutralization were considered to be non-specific and similar to those found in extracts from normal spleens.—ALAN E. PIERCE.

GENGOZIAN, N. & WOLFE, H. R. (1957). **Precipitin production in chickens. XV. The effect of aging of the antisera on precipitate formation.**—*J. Immunol.* **78**, 401-408. [Authors' summary modified.] 461

Storage of fowl antisera at 4°C. for 7 days or at 20°C. for 14 days resulted in: (a) an increase in interfacial titres with tests performed in 1.8% NaCl; (b) a decrease in nitrogen precipitation when the quantitative tests were performed in 8% NaCl; (c) an increase in nitrogen precipitation with most antisera when the quantitative tests were performed in 1% NaCl.

Inactivation of fowl complement by versene is to be preferred to heat (56°C., ½ hour) since the latter may contribute to the co-precipitation of non-specific nitrogen when the quantitative test is performed in 8% NaCl.

Treatment with versene decreased the nitrogen precipitation in the antigen excess region of the precipitin curve. This was quite evident in 1% NaCl.

PENN, N., HAUROWITZ, F. & YENSON, M. (1957). **Interaction between internally labeled complement and specific precipitates.**—*J. Immunol.* **78**, 409-412. 462

Labelled complement was present in the blood of g. pigs, injected i/p 8-10 hours previously with 4-10 mc of S<sup>35</sup>-labelled yeast protein hydrolysate. Various properties of labelled complement were described.—R.M.

RICE, C. E. & ANNAU, E. (1957). **Comparison of complement titres and serum protein values in guinea pigs at different seasons of the year.**—*Canad. J. comp. Med.* **21**, 223-224. 463

The authors failed to show relationship between fluctuations in complement titres and the total protein, albumin, or globulin content of g. pig serum, during a 13 months observation period.—P. BOULANGER.

MATTHIESEN, M. (1957). **Studies on the ornithosis-related antigen from *Bacterium anitratum*. *Bacterium anitratum* and its ability to produce the ornithosis-related antigen.**—*Acta path. microbiol. scand.* **41**, 247-256. [In English. Author's summary modified.] 464

A Gram-negative coccoid bacterium isolated from fertile hens' eggs (Strain T) was shown by morphological and biochemical studies to belong to the *Bact. anitratum* group. Psittacosis-related antigen ("B" antigen) was found in this and in 12 out of 20 other strains of *Bact. anitratum*, but not in 36 strains of other bacteria. In some of the strains of *Bact. anitratum* the antigen was only demonstrable after boiling.

GOODWIN, R. F. W. & COOMBS, R. R. A. (1956). **The blood groups of the pig. IV. The A antigen-antibody system and haemolytic disease in new-born piglets.**—*J. comp. Path.* **66**, 317-331. 465

The detection of naturally occurring anti-A titres of over 1:1000 suggested that haemolytic disease might occur in the absence of iso-antibodies artificially stimulated by the injection of crystal violet swine fever vaccine. An investigation of anti-A titres revealed extreme fluctuations within the individual so that pigs could not be divided into groups of high and low titre and the risk at farrowing could be determined only by blood tests at the end of gestation. At this time the anti-A titre of the colostrum was frequently considerably higher than in the maternal serum. The red cells of 65 neonatal piglets

tested did not react with anti-A serum, although 23 of these animals were shown to be group A in subsequent tests. The authors conclude therefore that haemolytic disease is unlikely to occur, first because the red cells are devoid of A antigen, and secondly because any ingested anti-A would be neutralized by A-substance present in the alimentary secretions. Anti-A serum injected intraperitoneally into three neonatal piglets was detected in the serum of two which were group O, while the third group A piglet remained negative, thus suggesting that neutralizing A-substance existed elsewhere in addition to the saliva and gastric juice. The injection of A cells into pigs with anti-A titres caused a mild haemolytic reaction from which recovery was rapid.—A. E. PIERCE.

NEWBERNE, J. W., ROBINSON, V. B. & RISING-MOORE, F. (1956). **Hemolytic anemia in baby pigs—a report of a case.**—*J. Amer. vet. med. Ass.* **129**, 361-363. 466

Haemolytic anaemia is reported among neonatal piglets farrowed by 17 out of 38 sows bred to a single boar. The outbreak involved 23 litters and 75 piglets died. The aetiology of the disease is discussed. The sows had been injected with swine fever vaccine prepared from pig spleen tissue, and it is suggested that this might stimulate iso-antibodies capable of causing haemolysis when the immune lactoglobulins were absorbed by the sucking piglets.

—A. E. PIERCE.

CLARINGBOLD, P. J. & SOBEY, W. R. (1957). **Studies in anaphylaxis. I. Quantitative scores for anaphylaxis in mice.**—*Aust. J. biol. Sci.* **10**, 360-364. [Authors' summary copied verbatim.] 467

Quantitative scores for anaphylactic symp-

toms in mice have been estimated. The usefulness of these scores is discussed, and their superiority over the commonly used quantal score (alive or dead) is emphasized.

FULTON, J. D., HARRIS, W. E. & CRAFT, C. E. (1957). **Hematocrit change as indication of anaphylactic shock in the mouse.**—*Proc. Soc. exp. Biol., N.Y.* **95**, 625-627. 468

In studies on anaphylactic shock, an increase of 5% or more in the haematocrit value was demonstrable, within 15 min. after challenge, in 75% of a group of mice in which the mortality from anaphylaxis was 47%. Increase in the haematocrit value may be a more sensitive index of anaphylaxis in mice than death from anaphylactic shock.—F.E.W.

WEISSBACH, H., WAALKES, T. P. & UDEN-FRIEND, S. (1957). **Presence of serotonin in lung and its implication in the anaphylactic reaction.**—*Science* **125**, 235-236. 469

G. pig lung contained low concentrations of serotonin and high concentrations of histamine. Therefore anaphylaxis could be explained on the basis of histamine release and protection imparted by antihistamines. On the other hand mouse lung contained high concentrations of serotonin, and low concentrations of histamine. Therefore lysergic acid diethylamide which inhibits the action of serotonin on smooth muscle has been shown to protect the mouse against anaphylaxis while antihistamines have little effect. The authors suggest that in species such as the rat and rabbit where both serotonin and histamine are present in the lung both agents should be considered in explaining the pulmonary effects seen in anaphylaxis.

—A. E. PIERCE.

See also absts. 331 (transfer of humoral antibodies in TB.); 337 (Johne's disease vaccine for sheep); 345 (bacterin for shipping fever); 366-367 & 371 (brucellosis); 378 (blackleg bacterins); 382 (persistence of effect of initial antigens in serum horses submitted to series of immunizations); 386 (cross-immunity between Br. melitensis and M. tuberculosis); 405-410 (F. & M. disease); 414 (rabies); 418 (western equine encephalitis antibodies in pigeons); 431 (distemper); 432 (canine virus hepatitis); 434 ("dikovaniya" disease); 436 (Shope's papilloma); 438-443 (Newcastle disease); 444 (measles and distemper); 445 (gel-diffusion precipitin test); 446-448 (interferon); 449-455 (Q fever); 644 (book, haemolytic disease of new-born).

## PARASITES IN RELATION TO DISEASE [ARTHROPODS]

VORONIN, M. V. & IVASHKOV, I. S. (1957). **[Use of chlorophos against warble fly larvae.]**—*Veterinariya, Moscow* **34**, No. 5. pp. 76-78. [In Russian.] 470

Two s/c injections, 30 days apart, of 10-15 mg./kg. body wt. of chlorophos (o, o, dimethyl-2,2,2-trichlor-1-oxyethyl phosphonate) in a 10% aq. soln. completely eliminated warbles from cattle. External application of 5-10% soln.

eliminated larvae in a late stage of development. The doses are harmless, and the milk from treated cows is suitable for animals.—M.G.G.

DAVIES, L. (1957). **A study of the blackfly, *Simulium ornatum* Mg. (Diptera), with particular reference to its activity on grazing cattle.**—*Bull. ent. Res.* **48**, 407-424. [Author's summary modified.] 471



Samples of aquatic stages, taken from a stream near Durham, England, showed that *Simulium ornatum* emerged in quantity from April to October and that oviposition took place between May and October. Oviposition was confined to the period between sunset and dusk. Flies emerging in the early summer of 1952 were smaller than those emerging in the spring and late summer of that year.

*S. ornatum* landed on cattle from dawn to dusk, with usually a small peak 2-4 hours after dawn, and a large peak between sunset and dusk on warm, sunny days. On cool, cloudy days the number of flies landing showed irregular fluctuations throughout the day. The number of flies landing on untethered cattle was not dependent on air temperature or saturation deficiency. Winds of over 5 m.p.h. decreased or inhibited landing activity. About 70% of black-flies spent less than 10 min. on cattle after landing.

Of the flies which landed 8-25% were calculated to bite the cow. The number of bites sustained by cattle in the district appeared to cause no ill-effect, apart from the formation of scar tissue in the navel region where most bites were inflicted.

WIEDNER, W. (1956). Über die Verträglichkeit der subkutan injizierten  $\gamma$ -Isomere des Hexachlorcyclohexans für Jungrinder. [Tolerance of young cattle to subcutaneous injections of the  $\gamma$ -isomer of benzene hexachloride.] — *Arch. exp. VetMed.* **10**, 935-950. 472

Varying amounts in two to seven doses of a 10% solution of the pure gamma isomer of B.H.C. were injected s/c into 6 cattle, 6-12 months old. Two undosed animals served as controls. Blood examinations were made every few days for several weeks and comprised red and white cell counts, differential leucocyte counts, haemoglobin estimations, Weltmann coagulation, Takata-Ara and diastase tests, and estimation of residual nitrogen. Biological tests on extracts of serum, faeces, and urine were made, using *Drosophila* flies. The comparative results are given in tabular form. Slight toxic symptoms occurred in only one animal, which had epileptiform convulsions for a short period. —M. L. CLARKE.

ROBBINS, W. E., HOPKINS, T. I. & EDDY, G. W. (1956). The metabolism of P<sup>32</sup>-labeled Bayer

L 13/59 in a cow.—*J. econ. Ent.* **49**, 801-806. 473

The fate in the mammalian body of L 13/59 (o,o - dimethyl-2,2,2-trichlorethyl phosphonate) labelled with <sup>32</sup>P was investigated by feeding the compound, in a dose of 25 mg./kg. to a lactating cow, which had 12 third-stage larval *Hypoderma bovis* in its back. Radiometric analyses were made of blood, urine, and milk, and radioactivity of the faeces and of the warbles and their exudates was studied. The peak of radioactivity in the blood was reached within 1-3 hours after administration. Less than 0.2% of the radioactivity in the dose was recovered in the milk at the end of 144 hours. Peak of excretion in the urine occurred from 2½-5½ hours later. Ready absorption of the compound was evidenced by the finding of less than 3% of the total dose in faecal samples. Only a low level of radioactivity was found in warbles removed at intervals after the cow had been fed the insecticide.—M. L. CLARKE.

LIPANOWICZ, J. & ZWIERZCHOWSKI, J. (1957). Swierzb lisów niebieskich (*Alopec lagopus* L.). Leczenie heksachlorocykloheksanem. [Benzene hexachloride treatment of mange in blue foxes.]—*Méd. vét., Varsovie* **13**, 394-397. [In Polish. English and Russian summaries.] 474

An account of outbreaks involving 368 foxes on 5 farms. 60 affected animals were dipped 2-3 times with an interval of 7-10 days, in 2-5% of benzene hexachloride. Four badly affected ones died within 3 hours of dipping with symptoms of excitability, salivation and convulsions. Skin scrapings taken 2 and 10 days after the first dipping revealed only dead parasites and after 40 days no evidence of parasites was found. Within 3-6 weeks after the first dipping the hair was growing again and within 3 months the recovery was complete. On one farm 4 watch dogs and 2 men were also affected. —M. GITER.

MYKYTOWYCZ, R. (1957). Ectoparasites of the wild rabbit, *Oryctolagus cuniculus* (L.) in Australia.—*C.S.I.R.O. Wildl. Res. Aust.* **2**, 63-65. 475

This check list includes many new records of occurrences.—M. D. MURRAY.

## PARASITES IN RELATION TO DISEASE [HELMINTHS]

GRABER, M. (1957). Action de l'arséniate de plomb sur divers Anoplocephalidae du mouton. [Lead arsenate as an anthelmintic for tapeworms in sheep.]—*Rev. Elev.* **10**, 119-128. [English and Spanish summaries.] **476**

Oral administration of 1 g. lead arsenate per head to sheep in French Equatorial Africa resulted in complete eradication of *Moniezia expansa*, *M. benedini*, *Stilesia globipunctata* and *Avitellina centripunctata*. The drug is contra-indicated for animals in poor condition or suffering from other diseases, and for ewes more than 4½ months pregnant, in which it may precipitate parturition. The fatal dose for normal sheep is about 4 g. The toxicity of meat from recently treated animals is not known but the meat appears to be safe if slaughter occurs more than 96 hours after treatment.

—H. SCOTT McTAGGART.

FAIN, A. (1956). Cénurose chez l'homme et les animaux due à *Taenia brauni* Setti au Congo Belge et au Ruanda-Urundi. I. La cénurose chez les animaux sauvages, avec existence de localisations cérébrales. II. Relation de huit cas humains. [*Coenurus* (*Taenia brauni*) in man and animals in the Belgian Congo. I. In the brain of wild animals. II. In man.]—*Ann. Soc. belge Méd. trop.* **36**, 673-677 & 679-696. [In French. Flemish summaries.] **477**

I. F. recorded "coenurus" cysts of *T. brauni* from 6 new wild animal hosts and from man in Ruandi Urundi, where the majority of dogs harbour *T. brauni*. The cysts were found in 5 species of rats and a monkey. In the rats the cysts were nearly always subcutaneous, intraperitoneal or intrathoracic, but in 3 cases they occurred in the brain. In the monkey the cysts were in the brain and heart, and one subcutaneous. In 8 human cases the cysts were subcutaneous.

In a study of the life-cycle of *T. brauni*, F. found that the larvae invaded the lungs in a similar manner to that of the larvae of certain nematodes.

II. Descriptions are given of "coenurus" cysts believed to be those of *T. brauni* found in the 8 human cases recorded above, (children 11 months to 14 years old.) Although the cysts were subcutaneous F. suggests the possibility of their localization in the brain of man.

—M. L. CLARKE.

ALLEN, A. M. (1957). Pulmonary hydatid disease in a rhesus monkey.—*Arch. Path.* **64**,

148-151. [Author's summary copied *verbatim*.] **478**

Pulmonary hydatid disease is described in an adult female *Macaca mulatta* monkey, with involvement of both cardiac lobes, the right apical and left diaphragmatic lobes, and the diaphragm. Anaphylaxis is suggested as the immediate cause of death.

SOULSBY, E. J. L. (1957). An antagonistic action of sheep serum on the miracidia of *Fasciola hepatica*.—*J. Helminth.* **31**, 161-170. [Author's summary modified.] **479**

A thermostable serum constituent is described which has a lethal effect on the miracidia of *F. hepatica*. This requires the thermolabile components of g. pig complement for its lethal action. It is apparently similar to substances present in other normal sera and which have an antagonistic action on a wide range of organisms.

LARSH, J. E., JR. & GOULSON, H. T. (1957). The effectiveness of cadmium oxide against *Trichinella spiralis* in mice.—*J. Parasit.* **43**, 440-445. [Authors' summary modified.] **480**

Medicated feed in pellet form containing 0.015% cadmium oxide was shown, by various feeding schedules in mice, to produce a striking reduction in the number of adults and larvae of *T. spiralis* recovered after a single infection. An even greater effect was shown in the reduction of adult worms recovered from mice after one re-infection. The results encourage the testing of this chemical against *T. spiralis* in pigs.

SCHMIDT-HOENSDORF, F. & EHRENTREICH, F. (1957). Untersuchungen über die Vernichtung von Strongylidenlarven durch "Raubpilze" der Gattung *Arthrobotrys*. [Destruction of strongyle larvae by fungi of the genus *Arthrobotrys*.]—*Zbl. VetMed.* **4**, 389-402. [English, French and Spanish summaries.] **481**

Three species of the genus *Arthrobotrys* are able to capture nematode larvae in their prehensile organs consisting of three-celled loops or spiral snares. The latter, present in *A. oligospora* and *A. conoides*, and also the very large prehensile ring of *A. dactyloides*, can capture large strongyle larvae. Unfortunately the nutritive requirements of *A. dactyloides*, the most efficient predator of the three, are so specialized that it is unlikely to be of much value in removing horse strongyle larvae from pasture.

—E. G. WHITE.



SYMONS, L. E. A. (1957). **Pathology of infestation of the rat with *Nippostrongylus muris* (Yokogawa). I. Changes in the water content, dry weight, and tissues of the small intestine.**—*Aust. J. biol. Sci.* **10**, 374-383. [Author's summary modified.] **482**

The fresh weight of the rat's small intestine with its contents, as well as the intestinal tissue alone, doubled during the 15 days following infestation by the nematode *N. muris*. This increase, which was independent of the growth of the rat, was largely due to a two-fold increase in the water content. The dry weight of the tissues was increased by half. Associated with these changes was a two-fold increase in the tangential diameter of the jejunum which was the site of the infestation. This was not due solely to a dilatation but also to the increase in the amount of intestinal tissue. The width of the circular layer of the muscularis externa of the jejunum was doubled and the longitudinal layer was increased by half. Histologically, the increase of the circular layer appeared to be due to hypertrophy, but an increase in the number of the smooth-muscle nuclei suggested that hyperplasia might also be present.

MARTIN, W. B., THOMAS, B. A. C. & URQUHART, G. M. (1957). **Chronic diarrhoea in housed cattle due to atypical parasitic gastritis.**—*Vet. Rec.* **69**, 736-739. [Authors' summary modified.] **483**

Gastritis in young housed cattle was associated with large numbers of nematodes, mainly *Ostertagia ostertagi*, in the abomasum. The chief clinical features were severe chronic diarrhoea and emaciation, usually terminating fatally. The pathological changes, confined to the abomasum, were thickening and granularity of the mucosa. The histopathology is described. A possible explanation for the delay of 3-10 weeks before symptoms appeared is that the growth of the worms was inhibited.

SOULSBY, E. J. L. (1957). **Studies on the serological response in sheep to naturally acquired gastro-intestinal nematodes. II. Responses in a low ground flock.**—*J. Helminth.* **31**, 145-160. **484**

Using a haemagglutination test [see *V.B.* **27**, 1493], S. found that the antibody titre was inversely related to the faecal worm egg count in a flock of 43 sheep infested with gastro-intestinal nematodes. The spring rise in faecal egg count was preceded by a decrease in the immune status of the sheep and was terminated by a "self-cure" mechanism which established a period of protection.—R.M.

THOMAS, P. L. & ELLIOTT, D. C. (1957). **The use of fine-particle phenothiazine against *Trichostrongylus colubriformis* in sheep with observations on its use against other species of worms.**—*N.Z. vet. J.* **5**, 66-69. **485**

1 $\mu$  and 4 $\mu$  grades of phenothiazine were significantly more effective than 10 $\mu$  grade against *T. colubriformis* in experimentally infected sheep. Conclusions regarding other species, occurring as light natural infections, are tentative. Against *Haemonchus contortus* and *Cooperia* spp. 4 $\mu$  grade may be optimum but differences were not statistically significant. Against *Oesophagostomum* spp. and *Chabertia ovina* effectiveness apparently decreased with particle size. It is suggested that the ideal phenothiazine preparation both for anthelmintic and manufacturing considerations should contain 70% of particles under 5 $\mu$  (or 90% under 10 $\mu$ ) with the remainder up to 30 $\mu$ .—H. SCOTT McTAGGART.

BAKER, D. & GÜRALP, N. (1957). **Lungworm disease in ponies. A case report of the respiratory worm parasitism in ponies and a donkey.**—*Cornell Vet.* **47**, 456-464. [Authors' summary modified.] **486**

Lungworms were found in a pony, 1½ years old, which had died from a debilitating disease. They were identified as *Dictyocaulus arnfieldi* and represent the first reported case in a pony in New York State and probably in the U.S.A. *D. arnfieldi* larvae were collected from the faeces of a companion pony, and also from a donkey.

ALLAN, D. & BAXTER, J. T. (1957). **On the overwintering on pasture of *Dictyocaulus viviparus* larvae in Northern Ireland.**—*Vet. Rec.* **69**, 717-718. [Authors' summary modified.] **487**

*D. viviparus* larvae persisted on 2 unstocked pastures in Northern Ireland from September 1956 to April 1957.

CAMPBELL, D. J. & WETHERILL, G. D. (1957). **Parasitic bronchitis in adult cattle in Ontario—A case report.**—*J. Amer. vet. med. Ass.* **131**, 273-275. [Authors' summary modified.] **488**

Signs of parasitic bronchitis appeared 12 days after the herd was turned into a lush pasture on which effluent from the barnyard drained. Only lactating cows were severely affected. The condition resembled "acute pulmonary emphysema" as reported by various North American workers.

PARKER, W. H. (1957). **Diethylcarbamazine in the treatment of lungworm infestation of calves due to *Dictyocaulus viviparus*.**—*J.*

comp. Path. 67, 251-262. [Author's conclusions modified.] 489

In an outbreak of husk an oral dose of 1 mg. diethylcarbamazine per lb. body wt. prevented deaths in 37 calves 9 to 12 months old; 11 of 37 untreated calves died or had to be destroyed. Doses of 25 mg./lb. daily for 5 days, given 14 to 18 days after heavy experimental infestation of calves less than 5 months old, prevented death and the calves made reasonable weight gains. Treatment at later stages was less effective and tended to delay death rather than prevent it. The drug depressed larval counts in the faeces of affected calves. Further experiments are needed to discover the optimum dose, the effectiveness of the drug in moderate lungworm infestations and the period of the disease during which it is effective.

BAXTER, J. T. (1957). Treatment of bovine parasitic bronchitis.—*Vet. Rec.* 69, 870, 490

In 3 trials involving a total of 29 animals treated with cyanacethydrazide and 19 controls, no distinction could be made in their final clinical condition: the parasite burden was not ascertained. In a similar small-scale trial, a proprietary injection containing carbon tetrachloride appeared to confer no benefit on the treated animals. In uncomplicated mild to moderately severe cases, removal of the animals from the source of infection, improved nutrition and provision of shelter seemed to be more important than removal of the parasites.—E.V.L.

GIBSON, E. A. & BARNES, E. G. (1957). *Acuaria uncinata* infestation in domestic geese and ducks.—*Vet. Rec.* 69, 754-756. [Authors' summary modified.] 491

Two outbreaks of *A. uncinata* infestation are described, one in goslings and the other in ducks. Three of the 10 goslings died. None of the ducks died, but they became unthrifty. No previous record has been found of *A. uncinata* in domestic geese in Gt. Britain.

WHITLOCK, H. V. (1957). A technique for staining and counting *Syphacia obvelata* in the faeces and ingesta of mice.—*J. Helminth.* 31, 131-134. [Author's summary modified.]

See also abst. 642 (report, British Honduras).

fied.]

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A method is described for the recovery of oxyurid nematodes from faeces and ingesta of mice, by washing and sieving after the worms have been stained with iodine. The technique takes a quarter of the time and is more efficient and less fatiguing than that previously used.

BALCH, R. K., FONSECA, J., RICE, W. G. & LEACH, B. F. (1957). Canine filariasis in the Far East.—*J. Amer. vet. med. Ass.* 131, 298-301. [Authors' summary modified.] 493

A Japanese-manufactured arsenical preparation ("Filarsen"), administered to 34-lb. dogs naturally infected with *Dirofilaria immitis*, was about 90% effective against the adult worm and was relatively non-toxic; only three days of treatment were required.

Mild to moderate infections may be safely treated with this drug, but treating massive infections may result in heart failure due to pulmonary obstruction.

PATTANYAK, S. & RAGHAVAN, N. G. S. (1956).

Microfilariae in domestic cats in India.—*Bull. Nat. Soc. India for Malaria and other Mosquito-borne Dis.* 4, 214-215. [Abst. from abst. in *Trop. Dis. Bull.* 54, 730-731, (1957), signed: J. J. C. BUCKLEY.] 494

Sheathed microfilariae, resembling those of *Wuchereria malayi*, were found in the blood of 2 out of 57 domestic cats in Orissa, India. The prevalent filarial infection in the people locally is with *W. bancrofti* but there are also a few foci of *W. malayi*. The microfilariae from the cats had two prominent terminal nuclei and a prominent excretory pore. Their average measurements were: length 215.2 $\mu$ ; breadth 8 $\mu$ ; cephalic space 10.5 $\mu$  long  $\times$  7.4 $\mu$  broad; distance from anterior end to nerve ring 45 $\mu$ , to excretory pore 62.5 $\mu$  and to anal pore 178.6 $\mu$ .

[This is an important finding in view of the present known distribution of the *malayi* type of microfilariae in non-human hosts, in Malaya and Kenya; the recovery and identification of the adult worms will be looked forward to with interest. It is to be hoped also that it will further stimulate workers to search for such microfilariae in domestic cats and dogs in other countries.]

## SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

KAST, A. (1957). Die Präputialkarzinome bei den Haussäugern. [Preputial carcinoma in domestic animals.]—*Mh. VetMed.* 12, 212-216. 495

From a survey of the literature on preputial carcinoma (including tumours of the surface of the penis as well as of the lining of the prepuce), a total of 106 cases were accepted—90 in horses,



5 in cattle, 11 in dogs, but none in small ruminants, pigs or cats.

K. describes 4 cases in detail—non-cornifying carcinomas of the external layer of the prepuce of a 13-year-old grey gelding and of the penis of an 18-year-old grey gelding; a cornifying carcinoma of the penis of a 10-year-old Poodle, and a non-cornifying carcinoma of the penis of a 10-year-old Terrier.

While venereal disease and castration would seem to have no influence on the development of such cancers, the specially-high incidence of these tumours in horses may be related to the anatomical and histological dispositions, which mean that there is an accumulation of smegma (*e.g.*, as smegmaliths) in the regions in which the tumours particularly develop—the end of the penis and the outer preputial fold.

—E. COTCHIN.

OHSIMA, K. & ONO, H. (1957). **Pathological study on a case of bladder carcinoma accompanied by chronic cystitis in cow.**—*Jap. J. vet. Res.* 5, 19-26. [In English.] 496

A detailed description is given of abattoir specimens from a 6-year-old cross-bred Holstein cow, which showed cystitis, adenomatous proliferations of the bladder mucosa, a non-metastasized transitional-cell carcinoma of the mucosa, ureteritis, and pyelonephritis. The lesions are considered to have developed in that order.

—E. COTCHIN.

ANDERSON, D. E., LUSH, J. L. & CHAMBERS, D. (1957). **Studies on bovine ocular squamous carcinoma ("cancer eye"). II. Relationship between eyelid pigmentation and occurrence of cancer eye lesions.**—*J. Anim. Sci.* 16, 739-746. [Authors' summary modified.] 497

The relationship between eyelid pigmentation and cancer eye was investigated in 842 Hereford cattle, of which 338 had lesions (benign precursor and carcinoma). Lesions were more frequent on the eyeball than on the lids, and rarest on the nictitating membrane and caruncle. There was an association between decreasing pigmentation and the development of lesions on the eyelids but not between eyelid pigmentation and lesions on the eyeball, nictitating membrane and caruncle. Breeding for resistance to cancer eye seems better than breeding for increased lid pigmentation.

ANDRAL, L. (1956). **Quatre cas de sarcome de Sticker observés en Éthiopie. [Four cases of Sticker's sarcoma in Abyssinia.]**—*Bull. Soc. Pat. exot.* 49, 1125-1126. 498

Of the 4 cases (transmissible venereal tumour

of dogs) reported, 2 were examined histologically: one, affecting the penis and prepuce of a 1½-year-old male, the other, the vulva of a 7 to 9-year-old bitch. This latter lesion regressed locally, while splenic metastases developed.

—E. COTCHIN.

BURROWS, D. & GIBSON, J. B. (1957). **Primary meningeal melanoma in a rabbit.**—*J. Path. Bact.* 74, 439-440. [Authors' summary copied verbatim.] 499

A localised melanoma of the meninges is described in a rabbit. No other foci of tumour were found in the animal and this is apparently the first instance in this species of a primary meningeal melanoma. It is compared briefly with similar tumours in some other animals and in man.

OBERLING, C., BERNHARD, W. & VIGIER, P. (1957). **Internal structure of the virus-like particles associated with the Rous sarcoma, and their presence in other neoplastic and normal chicken tissues.**—*Nature, Lond.* 180, 386-387. 500

Observations on 54 Rous sarcomas grown on young chicks and 21 tumours grown on chorioallantoic membrane revealed virus-like spherical particles with a diameter of 60-80  $\mu$ . They had 2 distinct membranes, the outer enclosing the particle and an inner one enclosing an apparently transparent zone around a dense core. This structure puts the particles in line with known virus bodies of similar ultra-structure and by analogy with the Bittner virus it might be assumed that the outer viral membrane is formed by a very small portion of the cell membrane at the moment when the virus body segregates itself from the cell from which it originates. This view would give a morphological basis for the idea of the presence in the Rous sarcoma virus of 2 antigens, the host antigen being located at the peripheral structure of the particle.

These bodies are present in other chicken neoplasms and even in normal young chickens and thus there may exist either an inactive ubiquitous agent in all chicken tissues which can become differentiated and oncogenic in an appropriate environment, or the particles in normal controls could represent the widespread lymphomatosis virus.—E.V.L.

BENDIXEN, H. J. (1957). **Undersøgelser over kvaegets leukose. I. Kvaegleukosens forekomst og udbredelse i Danmark. [Bovine**

leucosis. I. Incidence and distribution in Denmark.—*Nord. VetMed.* 9, 1-33. [In Danish. English and German summaries. Abst. from English summary.] 501

Bovine leucosis has been demonstrated in 305 herds in Denmark. Most of these herds are in Zealand and Lolland and a few in northern and southern Jutland. In these areas the annual incidence is 40 cases per 100,000 head of cattle, in other areas it is less than one. All breeds are affected. In 25 herds leucosis first developed after the purchase of animals from affected herds, the interval between the purchase and recognition of the first case being about 4 years. —M.G.G.

such plants were not present in any quantity on farms where bovine leucosis was occurring.

—E. COTCHIN.

BURGISSER, H. (1957). La leucose du lièvre. [Leucosis in hares.] — *Schweiz. Arch. Tierheilk.* 99, 141-149. [In French, English, German and Italian summaries.] 503

Leucosis, considered to be of myeloid type, was present in six hares from different parts of Switzerland. The lesions were of a systemic nature, with cellular infiltrations of the liver, spleen, lungs, lymph nodes and bone marrow. Affected organs were much enlarged. This is the first report of leucosis in hares.

—E. COTCHIN.

WIESNER, E. (1957). Die Bedeutung der Ranunculaceen für das Entstehen der Rinderleukose. [The role of Ranunculaceae in the aetiology of bovine leucosis.] — *Mh. VetMed.* 12, 177-179. 502

The possibility, suggested by Swedish observations, that bovine leucosis might be related in some way to the ingestion of Ranunculaceae in dry summers on phosphorus-deficient pastures, was not supported by the results of feeding trials (reported in detail) in which calves were fed a phosphorus-poor diet plus meadow buttercup *Ranunculus acris* or marsh marigold (*Caltha palustris*) with no significant effect on the white blood cell picture. Further, on some farms near Berlin where Ranunculaceae were common there was no definite leucosis, and, conversely,

BAKER, W. H., ZAMECNIK, P. C. & STEPHENSON, M. L. (1957). In vitro incorporation of C<sup>14</sup>-DL-leucine into normal and leukemic white cells.—*Blood* 12, 822-828. [Interlingua summary. Authors' summary modified.] 504

Normal w.b.c. and w.b.c. from patients with leukaemia are able to incorporate C<sup>14</sup>-DL-leucine into proteins *in vitro*. W.b.c. from individuals with chronic myelogenous leukaemia were able to incorporate significantly greater amounts of the amino-acid, and to maintain this incorporation for longer than the control cells. The incorporation was partially decreased in the presence of dinitrophenol, as well as in an atmosphere of nitrogen. Both types of cells had the same *in vitro* survival time of 4 days, after storage at 3°C.

## NUTRITIONAL AND METABOLIC DISORDERS

FLATT, W. P., HORVATH, D. J., DeCOSTA, L. C., STEWART, D. G. & WARNER, R. G. (1957). Cautions regarding the use of anthraquinone violet as an indicator in digestion and absorption studies.—*J. Anim. Sci.* 16, 688-691. [Authors' summary modified.] 505

Aqueous suspensions of anthraquinone violet dye were absorbed through the wall of the ligated reticulo-rumen of laparotomized calves. When the dye was added to the food of pigs, the carcasses were intensely coloured and subsequently condemned. The colour persisted in the body fat for as long as 7 months. Digestibility coefficients based on this dye were much lower than those obtained with Cr<sub>2</sub>O<sub>3</sub> as an indicator.

HAGGARD, J. M. (1957). A report on the relationship between water consumption and weight gains in swine.—*Vet. Med.* 52, 275-277. 506

177 pigs weighing about 100 lb. were divided

into two similar groups. Each group was managed identically except that one group was given a single drinking space while the other was given six drinking spaces. After a 30 day period the pigs having access to the most water were found to have eaten less food, gained more weight and exhibited fewer symptoms of intestinal disorders.

—E. J. CASTLE.

MATRONE, G., RAMSEY, H. A. & WISE, G. H. (1957). Purified diets for ruminants.—*Proc. Soc. exp. Biol., N.Y.* 95, 731-734. [Authors' summary modified.] 507

The efficacy of 3 purified diets, each containing a different mixture of energy-yielding constituents, for growth of lambs was investigated. Preliminary results indicate that lambs fed a diet containing glucose and 31.9% of the salts of volatile acids, acetic, propionic and butyric, did better than lambs fed diets containing either starch and glucose or starch, glucose and cellulose.



HAWKINS, G. E. & AUTREY, K. M. (1957). Effect of feeding low levels of diethylstilbestrol on established lactation in parous dairy cows.—*J. Dairy Sci.* 40, 746-751. [Authors' summary modified.] 508

Three groups each of 5 lactating cows were given 0, 0.068, or 3.4 µg. of diethylstilboestrol per lb. of food. The fat content, percentage of non-fatty solids, efficiency of production, body weight and utilization of nutrients were not affected. It is therefore unlikely that increased production is due to oestrogenic activity when cows change from dry to succulent young forage.

ALLDEN, W. G. & ANDERSON, R. A. (1957). "Unthriftiness" in weaner sheep.—*J. Dep. Agric. S. Aust.* 61, 69-86. 509

An "unthrifty" condition is described in weaner sheep grazing dry mature pastures in the higher rainfall areas of south-eastern South Australia. Weaners in particular lose weight during the dry summer months in the presence of abundant dry feed. Parasitic infestations or copper or cobalt deficiencies do not play any significant role in the unthrifty condition and it is not alleviated by mineral supplement top-dressing of pastures or treatment with vitamins A or D.

Pasture hay and silage are not efficient as supplements. Oat grain fed at a level of at least 1 lb. daily, or green fodder crops give the best response in terms of body wt.

Responses to supplementary feeding vary with the condition of the pasture, from 5-10 lb. oats being required per lb. body wt. gain and from 60-100 lb. oats per lb. greasy wool wt. increase.

Twin lambs, ewe lambs and lambs of low birth weights require special attention. Cross-bred lambs from Merino ewes grow and mature more quickly in the pre-weaning period than do Merino lambs under these conditions.

—P. K. BRIGGS.

PORTWAY, B. (1957). The characteristic syndrome following excessive consumption of grapes by cows.—*Aust. vet. J.* 33, 210-212. [Author's summary modified.] 510

A syndrome is described among dairy cows in the Murray Valley which have access to grapes, and may consume excessive amounts of them, particularly fresh ones, on occasion. The syndrome includes anorexia, ruminal and intestinal stasis, hyperpnoea, tachycardia, cessation of lactation, tenesmus and posterior paralysis. Access to water seems to aggravate the condition. Peracute cases and acute cases which

develop within 12 and 24 hours respectively, are nearly all fatal. Subacute cases which take up to 72 hours to develop may gradually recover.

BLAKE, J. T., ALLEN, R. S. & JACOBSON, N. L. (1957). The influence of various factors on surface tension and pH of rumen fluid.—*J. Anim. Sci.* 16, 190-200. 511

Short delays between collection of rumen fluid and determination of surface tension did not affect readings of the surface tension appreciably, providing the temperature of the sample remained constant. Surface tension increased when a sample was cooled from 37° to 15°C. The pH of rumen fluid was not appreciably affected by temperature changes or by time; it was higher in samples collected orally than in samples collected through a rumen fistula. Preparations used for the treatment of tympanites (turpentine, methyl silicones, detergents) greatly decreased the surface tension of rumen fluid. This was contrary to the findings of Clark [*V.B.* 19, 2746]. It was suggested that conflicting reports on the action of such agents were due to the use of very variable techniques.

—R.M.

NICHOLS, R. E., DILLON, R. D., PENN, K., BRYANT, J. & SCHREIBER, J. (1957). Effects of various surface active agents on the surface tension and other properties of paunch fluid. *Vet. Med.* 52, 285-288. 512

Ventral rumen fluid from two fistulated cows was used in an *in vitro* study of the effect of 98 different surface active agents on the surface tension, relative viscosity, gas production, mechanical foaming, sediment reaction and cellulose digestion of the fluid. Seven of these agents were chosen for an *in vivo* study and administered into the rumens of the two fistulated cows and the same measurements made. Various silicone products, sulphonates and lecithins were the most effective in reducing surface tension both *in vitro* and *in vivo*. One of these agents, an alkyl aryl sulphonate, was fed, either mixed with the grain or in rock salt, or in both to 1,400 cattle. It was accepted when fed with several pounds of grain, but intake of salt bricks containing this agent, was restricted, apparently because of the bitter taste. The authors consider the feeding of lecithin products to be more feasible owing to greater palatability.

—E. J. CASTLE.

BODA, J. M., SILVER, B. S., COLVIN, H. W., JR. & COLE, H. H. (1957). Studies on the experimental production and prevention of bloat in cattle. I. Influence of intra-

**rumen administration of fresh eggwhite on production of bloat.**—*J. Dairy Sci.* **40**, 759-767. [Authors' summary modified.] **513**

Intraruminal introduction of fresh egg-white produced moderate bloat in 5 cattle fed on lucerne meal. In 8 of 12 instances in which lucerne meal was fed before the administration of egg-white, the ruminal pressure exceeded 15 mm. Hg above atmospheric pressure. A stable foam was formed, which reduced the frequency of eructation for 90 min. Water-soluble protein may be an important factor in the aetiology of bloat from legumes.

NICHOLS, R. E., PENN, K. & SCHREIBER, J. (1957). **Frothing, surface tensions and viscosities of paunch contents associated with changes from alfalfa hay to fresh legumes.**—*Vet. Med.* **52**, 37-39 & 42. **514**

Two mature Jersey cows with rumen fistulas were stall fed and repeatedly subjected to sudden changes in diet from good quality lucerne hay to freshly cut ladino clover. Samples of ventral rumen fluid were taken before and at specified intervals after a feeding change. The change to the fresh clover resulted in periods of increased and excessive frothing associated with a high surface tension and viscosity.—E. J. CASTLE.

SHAW, R. A. & JACKSON, H. D. (1957). **Fractions from ladino clover which inhibit biological systems.**—*J. Anim. Sci.* **16**, 711-718. [Authors' summary modified.] **515**

Fractions of ladino clover were assayed *in vitro* for their physiological effects by kymographic tracings, Warburg's method of measuring the oxygen uptake of tissues, and Michel's method of measuring the cholinesterase activity of r.b.c. The alcohol soluble fraction and its water soluble components (aqueous fraction) inhibited 3 biological systems. The benzene soluble fraction and the butanol fraction were less inhibitory.

WILLIAMS, C. & RODBARD, S. (1957). **Weakness in young chicks on a diet supplemented with aluminum hydroxide gel.**—*Poult. Sci.* **36**, 602-606. [Authors' summary modified.] **516**

A syndrome of weakness leading to death within a week was produced by feeding chicks a diet containing high concentrations of a reactive aluminium hydroxide gel. Lower concentrations did not produce the weakness, nor did non-reactive aluminium hydroxide gel or aluminium phosphate gel. The syndrome was associated with a fall in the carotene, vitamin A and cholesterol content of the plasma. It was reversible if a regular mash diet replaced the gel

diet 2 days after the onset of weakness. Replacement with vitamin supplements did not reverse it. The syndrome was unlike the weakness due to decamethonium and it did not respond to neostigmine.

McGOWAN, B., WEIR, W. C. & CAMERON, H. S. (1957). **The effect of aureomycin, in the ration of fat lambs, on pneumonia and production.**—*Cornell Vet.* **47**, 389-393. [Authors' summary modified.] **517**

Aureomycin in the pelleted ration of 1,711 fattening lambs did not control pneumonia, but it improved the average daily gain, food utilization, speed of finishing, and cost per 100 lb. of gain, particularly at 10 mg. per lb. of food. Carcass grades or yields were not affected.

ANON. (1957). **Vitamin B12 and antibiotics in animal nutrition.** Annotated bibliography. pp. 100. Rahway, N.J.: Merck & Co., Inc. **518**

This comprises abstracts of 455 papers published between January 1955 and December 1956. The period 1950-54 has already been covered in the edition dated December 1954. There is a special section on the feeding of high levels of antibiotics. References to the use of a given antibiotic in a given species of animal may be found by consulting a table at the end of the book.—R.M.

KAUFMAN, B., NELSON, W. O., BROWN, R. E. & FORBES, R. M. (1957). **Digestibility and biological value of bacterial cells.**—*J. Dairy Sci.* **40**, 847-855. [Authors' summary modified.] **519**

*Escherichia coli* and *Lactobacillus arabinosus* were more digestible for rats when they were dried. The digestibility of *L. arabinosus* was greater than that of *E. coli*, whereas the reverse was true of their biological value. The biological value of casein was greater than that of either. Growth of *E. coli* on ammonium sulphate medium or on a tryptone medium did not alter its biological value. Addition of an amino-acid supplement containing histidine, methionine, lysine, phenylalanine, and tryptophane to a dried *E. coli* preparation increased its biological value. The value was decreased by the omission of methionine, but not by the omission of any one of the other amino-acids.

GOODWIN, R. F. W. (1957). **The concentration of blood sugar during starvation in the newborn calf and foal.**—*J. comp. Path.* **67**, 289-296. [Author's conclusions modified.] **520**

Eight Ayrshire calves were starved from birth for between 5 and 10 days. Two out of



4 calves that received no maternal serum died. The 4 calves which were injected with serum withstood starvation well and were reared without difficulty. One Jersey calf was also starved from birth. Although born weak, it survived for 5½ days. A pony foal was starved for 10 days and survived. In the calves the blood-glucose concentration generally reached about 100 to 130 mg. per 100 ml. during the first 30 hours. Thereafter, in those that survived, it declined to between about 55 and 85 mg. per 100 ml. for the remainder of starvation. If plasma-glucose concentrations are compared, it is possible that under similar conditions the foal maintains a higher circulating glucose concentration than the calf.

WELLER, R. A. (1957). **The amino acid composition of hydrolysates of microbial preparations from the rumen of sheep.**—*Aust. J. biol. Sci.* **10**, 384-389. [Author's summary modified.] 521

Bacteria and protozoa were separated from the rumen fluids of sheep which had been fed four different rations. Amino-acid analyses by ion-exchange chromatography were performed on hydrolysates of "whole protein" preparations of the microbial fractions. The composition of the bacterial hydrolysates was remarkably uniform, and the amino-acid distribution was similar to those reported for pasture leaf proteins. Compared with the bacteria, the protozoa appeared richer in "essential" amino-acids, particularly lysine.

ALLCROFT, R. (1957). **Treatment of copper deficiency in cattle and sheep by intramuscular injection of copper glycine (copper aminoacetate).**—*Vet. Rec.* **69**, 785. 522

A single injection of copper aminoacetate in an oily base was given i/m or s/c to 73 cattle and 54 sheep, in a dosage of 400 mg. (120 mg. Cu) and 150 mg. (45 mg. Cu), respectively [see also Cunningham, 1957 (*N.Z. vet. J.* **5**, 9)] and found to be as effective as i/v Cu in increasing the animals' Cu status, while causing only uneventful local reactions.—G. P. MARSHALL.

GOLDBERG, L., SMITH, J. P. & MARTIN, L. E. (1957). **Effects of massive iron overload in the rat.**—*Nature, Lond.* **179**, 734. 523

An iron-dextran complex was administered i/m to rats over a period of 18 months to a total dosage of 1650 mg. iron/kg; controls were given equivalent amounts of dextran without iron. The iron-loaded rats remained in good health and the only changes noted were rapid P.M. renal autolysis, brown uterus and testicular atrophy; there was also a massive accumulation

of ceroid-like pigments, particularly in the kidney. There was no development of haemochromatosis. None of these changes was present in the rats treated with dextran only.—E.V.L.

BALCH, C. C., HEAD, M. J., LINE, C., ROOK, J. A. F. & ROWLAND, S. J. (1956). **Some observations on the magnesium metabolism of dairy cattle.**—*Proc. Nutr. Soc.* **15**, pp. x-xi. 524

Intake and excretion of Mg was measured for about 8 days in cows feeding on a normal diet of hay, concentrates and silage, then for another 6-8 days in which the diet was changed to fresh spring cocksfoot. After the feeding of cocksfoot commenced the amount of Mg. absorbed fell below the minimum requirement, the amount of Mg in the urine fell, and hypomagnesaemia developed. The cows were apparently unable to draw on bodily reserves of Mg other than that circulating in the blood.—R.M.

BÉLANGER, L. F., VAN ERKEL, G. A. & JAKEROW, A. (1957). **Behavior of the dermal mast cells in magnesium-deficient rats.**—*Science* **126**, 29-30. 525

Three groups of five rats were fed a casein diet deficient in magnesium for periods of 7, 14 and 28 days, an identical number of controls for each group being fed the diet supplemented with magnesium. At the end of the periods the dermal mast cells were studied in portions of skin. At 7 and 14 days counts were normal but after 28 days the mast-cell population was only about half that of the controls. There was considerable degranulation and pleomorphism amongst these cells at 7 days but this became progressively less at 14 and 28 days.

—E. J. CASTLE.

RICHERT, D. A. & WESTERFELD, W. W. (1957). **Acetaldehyde oxidation in molybdenum deficiency.**—*J. biol. Chem.* **227**, 533-536. [Authors' summary copied *verbatim*.] 526

The diphosphopyridine nucleotide-linked acetaldehyde-oxidizing enzyme of rat liver was found to be independent of dietary molybdenum. The aldehyde-oxidizing activity of a dialyzed liver homogenate without added diphosphopyridine nucleotide constituted only 15 to 20% of the total activity and was Mo-dependent. Feeding a protein-free diet caused the elimination of 90% of the former and all of the latter activities.

BEHRENS, H. (1957). **Die Parakeratose des Schweines.** [*Parakeratosis in pigs.*]—*Tierärztl. Umsch.* **12**, 6-8. 527

The aetiology and clinical picture of para-

keratosis in pigs are described. Affected pigs of all ages are cured by daily administration of 500 mg. of zinc carbonate in the food for 3 weeks.—M.G.G

AINES, P. D. & SMITH, S. E. (1957). **Sodium versus chloride for the therapy of salt-deficient dairy cows.**—*J. Dairy Sci.* **40**, 682-688. [Authors' summary modified.] **523**

Sodium chloride and sodium bicarbonate, when fed to cows deficient in salt, increased milk production, body weight, and consumption of roughage. Magnesium chloride had no such effect. When sodium bicarbonate was given with the magnesium chloride, increases resembling those in the other groups fed sodium were obtained. Increases in blood sodium and plasma chloride concentrations were seen.

DENTON, D. A. & McDONALD, I. R. (1957). **The effect of a rapid change in  $\text{Na}^+$  balance on the salivary  $\text{Na}^+ : \text{K}^+$  concentration ratio of sodium-depleted sheep.**—*J. Physiol.* **138**, 44-62. **529**

This paper provides details of work previously reported in brief [*V.B.* **27**, 848].—R.M.

ELAM, C. J., HAM, W. E. & SCHNEIDER, B. H. (1957). **Influence of dietary sodium chloride on incidence of urinary calculi in sheep.**—*Proc. Soc. exp. Biol., N.Y.* **95**, 769-772. [Authors' summary modified.] **530**

Sixty wether lambs were divided into 12 lots of 5 each and fed the experimental diets for 105 days. The animals were group fed all they would consume twice daily. The variables included in the diets were the presence and absence of potassium acid phosphate ( $\text{K}_2\text{HPO}_4$ ), a 10% level of sodium chloride, a 30% level of beet pulp, and the ash of the same amount of beet pulp. Fourteen cases of urinary calculi resulted in the 60 sheep. None of these cases occurred in the 30 sheep which received 10%  $\text{NaCl}$ . Eleven of the 14 cases of calculi occurred in those lots receiving added  $\text{K}_2\text{HPO}_4$  in the diet, while 3 occurred in its absence. Beet pulp or beet pulp ash had no effect on the incidence of urinary calculi. [It is not stated whether there was any difficulty in getting the lambs to eat the food with such a high concentration of  $\text{NaCl}$ .]

WILLIAMS, J. D., ANSELL, B. M., REIFFEL, L., STONE, C. A. & KARK, R. M. (1957). **Electrolyte levels in normal and dystrophic muscle determined by neutron activation.**—*Lancet* **273**, 464-466. [Authors' summary modified.] **531**

Using the method of neutron activation,

samples of skeletal muscle from 10 patients with progressive muscular dystrophy, 7 with miscellaneous muscular disorders and 9 control patients were analysed for sodium, potassium, and phosphorus. The content of potassium per g. of non-collagen nitrogen was lower and the content of sodium higher in the dystrophic patients than in the controls.

BLAKEMORE, F., OTTAWAY, C. W., SELLERS, K. C., EDEN, E. & MOORE, T. (1957). **The effects of a diet deficient in vitamin A on the development of the skull, optic nerves and brain of cattle.**—*J. comp. Path.* **67**, 277-288. [Authors' conclusions modified.] **532**

Blindness may occur when calves are reared on a diet of sugar beet pulp, straw and protein cake. The effect of this diet was studied experimentally in 5 calves. Five control calves received vitamin A acetate twice weekly. Night blindness and abnormalities in vision occurred in the deficient calves. They developed papilloedema and one became totally blind. The growth of the bones of the skull was disproportionate, leading to constriction of the brain and increased cerebrospinal fluid pressure. Severe constriction of the optic nerve was found in the blind animal. This was not associated with a narrowing of the optic foramen, but appeared to be due to a number of factors including malformation of the foramen, increased cerebrospinal fluid pressure and a tendency for the elongated optic nerve to twist at the site of the foramen. The changes are discussed in relation to the natural disease. Reference is made to pituitary cysts.

GRANT, A. B. & O'HARA, P. B. (1957). **The rachitogenic effect of vitamin A.**—*N. Z. J. Sci. Tech.* **38**, Sect. A. 548-576. **533**

Albino rats were used as test animals to investigate the presence of a rachitogenic factor in green food. Extracts of the green food were fed; the rats were killed after 28 days and the percentage of bone ash in the fat-free femurs determined and compared with that of controls. A rachitogenic factor would have a bone-ash-depressing effect.

The vitamin D content of pasture was found to bear no relation to the season of the year in which the sample was taken. Extracts from the dead brown leaves in the pasture had an anti-rachitic effect while those from the fresh green leaves had a rachitogenic effect, which was more noticeable in the animals receiving vitamin D in the diet.

The rachitogenic factor was separated and identified as carotene, but it was eventually con-



sidered to be vitamin A itself, as equivalent amounts of this vitamin and carotene had the same rachitogenic potency.—E. J. CASTLE.

MCDONALD, M. W. & DUNCAN, D. C. (1957).

**Vitamin D<sub>3</sub> and winter egg production at the latitude of Sydney.**—*Aust. vet. J.* **33**, 207-209. [Authors' summary modified.] **534**

The effect of vitamin D<sub>3</sub> supplementation on winter egg production of White Leghorn hens was studied in 1955 and 1956. In 1955 vitamin D produced a significant response while in 1956 there was no detectable effect. The difference in response between years is related to meteorological differences. The difficulties of studying small but commercially important responses in laying hens is discussed briefly.

BAECHTEL, W. R., ALLEN, J. R. & DOBSON, H. L. (1957). **Paper electrophoresis of muscle fractions from vitamin E deficient rabbits.**—*Proc. Soc. exp. Biol., N.Y.* **96**, 3-5. [Authors' summary modified.] **535**

Three pairs of male litter-mate rabbits were fed a vitamin E deficient and a vitamin E supplemented diet. When the vitamin E deficient member of each pair showed typical symptoms of vitamin E deficiency, the pair was killed and the water soluble muscle proteins extracted from the striated muscle. The electrophoretic pattern of the deficient animals revealed a significant change in distribution of water soluble proteins as compared with that of the control group. This change was an increase in the peak of fast moving and a decrease in that of the slow moving components.

PATTERSON, E. L., MILSTREY, R. & STOKSTAD, E. L. R. (1957). **Effect of selenium in preventing exudative diathesis in chicks.**—*Proc. Soc. exp. Biol., N.Y.* **95**, 617-620. [Authors' summary modified.] **536**

Chicks fed a diet containing torula yeast developed exudative diathesis which could be prevented by either vitamin E or a non-fat-soluble substance in casein and in a number of pig tissues. This factor could be made water soluble by acid hydrolysis. It was adsorbed on both anion and cation exchange resins. An alkaline ash but not an acid ash of pig kidney was effective in preventing exudative diathesis. Selenium as selenite prevented exudative diathesis at 0.3 ppm. Tellurium as tellurite was ineffective at 3 p.p.m. Anionic arsenic at 10 p.p.m. was inactive.

SCHWARZ, K., BIERI, J. G., BRIGGS, G. M. & SCOTT, M. L. (1957). **Prevention of exudative diathesis in chicks by factor 3 and**

**selenium.**—*Proc. Soc. exp. Biol., N.Y.* **95**, 621-625. [Authors' summary modified.] **537**

It is shown that exudative diathesis in the chick, produced by vitamin E-free *Torula* yeast diets, is prevented by crude sources and purified fractions of Factor 3. Selenium, recently identified as the integral part of Factor 3, was highly active. Protection was obtained with 10 µg. of selenium per 100g. of diet in the form of seleno-cystathionine or sodium selenite; 200 µg. of elemental selenium were also effective. All 3 forms of the element stimulated growth.

MAGNANI, G. (1957). **Influenza della streptomycina sulla sintesi della vitamina B<sub>1</sub> nel rumine di *Ovis aries* L. [Effect of streptomycin on the synthesis of vitamin B<sub>1</sub> in the sheep's rumen.]**—*Veterinaria, Milano* **6**, 91-94. [English, French and German summaries.] **538**

Oral streptomycin treatment with 30 mg. per kg. body wt. daily for 9 days in 2 sheep caused the rumen vitamin B<sub>1</sub> content to rise by 34 and 39% respectively.—G. P. MARSHALL.

PHILLIPSON, A. T. & REID, R. S. (1957). **Thiamine in the contents of the alimentary tract of sheep.**—*Brit. J. Nutr.* **11**, 27-41. [Authors' summary modified.] **539**

The thiochrome method was used to study the concentration of thiamine in the rumen contents of 16 sheep fed on 8 different rations. A general relationship was found between the thiamine content of the food and of the rumen contents. Very little was present in the coarse food residues in the rumen; appreciable concentrations were found in the fraction consisting of small food particles and micro-organisms, but most of it was extracellular and in solution. Preliminary hydrolysis rendered it soluble in isobutanol. The concentration of thiamine in the dry matter of the intestine decreased from the duodenum to the ileum. The conc. in the dry matter of the caecum was similar to that in the dry matter of the ileum, except in sheep fed on hay. Thiamine in the small intestine and caecum was in solution, but the proportion in the solid deposit in the caecal contents was greater than in the solid deposit in other parts of the gut. A biological assay in depleted rats of the thiamine in rumen contents gave reasonable agreement with the thiochrome method.

KRATZER, F. H. & LANTZ, F. H. (1957). **The effect of folic acid on the use of glycine by the turkey poult.**—*J. Nutr.* **62**, 593-600. [Authors' summary copied *verbatim*.] **540**

In poults fed rations low in folic acid, glycine caused depressed growth, increased

mortality and cervical paralysis. The effects could be prevented by supplementing the rations with folic acid. DL-Serine at an equimolar level had no adverse effect upon the birds. Poults fed a ration deficient in glycine as well as folic acid also developed cervical paralysis. This indicates that the cervical paralysis is a result of a deficiency of folic acid rather than an excess of glycine.

ERSHOFF, B. H. (1957). **Beneficial effects of alfalfa and other succulent plants on glucoascorbic acid toxicity in the rat.**—*Proc. Soc. exp. Biol., N.Y.* **95**, 656-659. [Author's summary modified.] **541**

Young rats fed for 7 days a purified ration containing 4% glucoascorbic acid were retarded in growth and had severe diarrhoea. These effects were counteracted by supplementing the diet with dried lucerne and other succulent plants. The protective factor in lucerne was retained in the residue fraction (water washed pulp remaining after extraction of the juice). Supplements of all known nutrients were without significant effect.

PIPES, G. W., PREMACHANDRA, B. N. & TURNER, C. W. (1957). **Technique for *in vivo* measurement of thyroidal  $I^{131}$  in cattle.**—*J. Dairy Sci.* **40**, 340-350. [Authors' summary modified.] **542**

Equipment for the quantitative study of thyroidal  $I^{131}$  in the ox is described. It consists of a scintillation counter mounted on a flexible arm, which is attached to a head-holder designed to immobilize the head and neck of the animal. It is sufficiently sensitive to permit the use of 50 or less  $\mu$ C. of  $I^{131}$ . The normal uptake and release of  $I^{131}$  by the bovine thyroid were ascertained, and the effect of goitrogens upon reutilization of  $I^{131}$  from metabolized thyroid hormone was described. One g. of thiouracil per 100 lb. inhibited re-utilization. Replacement therapy with thyroxine during treatment with thiouracil indicated the feasibility of measuring the daily secretion rate of L-thyroxine.

MARSHAK, R. R. (1957). **Recent etiological considerations in milk fever.**—*Vet. Ext. Quart. Univ. Pa* No. 146, pp. 104-118. **543**

M. does not consider parathyroid hypofunction or a deficiency in skeletal mineral reserves to be of primary importance in the aetiology of milk fever. He thinks that the way in which the secretory cells of the mammary gland handle the milk precursor calcium is of

much more importance. Work is quoted giving evidence of a calcium storage mechanism in the mammary gland. This pooling of precursor calcium, obtained from the blood, is especially striking in milk fever susceptible cows and could be sufficient to precipitate the disease. It is also considered that individual variations in susceptibility to falls in serum calcium and in true digestibility of calcium may be of importance.—E. J. CASTLE.

BROWN, R. E. & SHAW, J. C. (1957). **Rumen volatile acids of normal, ketotic, and fasted cows.**—*J. Dairy Sci.* **40**, 667-671. [Authors' summary modified.] **544**

There was no difference in the amount of volatile acids in the rumen of ketotic cows off their food and healthy cows fasted for 18 to 24 hours. They all had a lower total quantity of rumen acids, with more acetic and less propionic acid, than healthy cows on normal rations. There was no difference between healthy, fed cows and ketotic cows with normal appetite.

HORROCKS, D. & PATERSON, J. Y. F. (1957). **Some observations on glucose, ketone bodies and volatile fatty acids in the blood of dairy cattle.**—*J. comp. Path.* **67**, 331-341. [Authors' conclusions copied *verbatim*.] **545**

Determinations of blood glucose, acetone, acetoacetate and volatile fatty acids were made on 21 normal cows from 10 weeks before to 10 weeks after calving. In most cows blood glucose increased at parturition and decreased to transient lower levels after parturition. Volatile fatty acid levels were highest in the first few weeks of lactation, and in most cows ketone bodies showed no appreciable change.

Seasonal variation in the blood levels of these substances was seen, glucose being significantly lower in winter, volatile fatty acids significantly higher in winter, and ketone bodies lower in winter and early spring.

ADLER, J. H. (1957). **A method for direct estimation of acetone content of blood samples.**—*Cornell Vet.* **47**, 354-360. [Author's summary modified.] **546**

A direct method of estimating the acetone content of blood is described. It employs the salicylaldehyde reaction with acetone in an alkaline medium and is adapted to an indicator paper technique. The test appears satisfactory under lab. conditions; its value in the field is yet to be determined.



## DISEASES, GENERAL

GLÄTTL, H. R. (1957). Die Verwendung ionaldispers-wirksamer Lösungen (Elektrosolen) in der Therapie der Kälberruhr, der Blutacidose und bei Serumkalium-Defizit. [Use of a solution of electrolytes in the treatment of calf scours, acidosis and potassium deficiency.] — *Schweiz. Arch. Tierheilk.* **99**, 275-278. [English, French and Italian summaries.] **547**

G. confirmed the findings of McSherry & Grinyer [see *V.B.* **25**, 1733] in the successful treatment of diarrhoea in calves by i/p injection of a solution of electrolytes, together with chemotherapy. The solution had a favourable effect on winter dysentery and other diseases causing blood acidosis when given in an i/v infusion to adult cattle.—M.G.G.

MEGINNIS, P. (1957). Myositis (tying up) in race horses.—*J. Amer. vet. med. Ass.* **130**, 237-239. **548**

"Tying up" in racehorses resembles clinically the paralytic myoglobinuria or azoturia which occurs usually in draught horses. Paralytic myoglobinuria, however, is more frequent in winter; it develops after an animal has been confined to the stable for a few days, and unless the affected horse is immediately rested, death is likely to ensue. "Tying up" occurs at any time of the year, and is not fatal. As its cause is unknown, treatment is empirical. The author uses pentobarbitone sodium, to relax the animal, and prontosil soluble, for its possible detoxifying action.—M.G.G.

EVANS, C. LOVATT, NISBET, A. M. & ROSS, K. A. (1957). A histological study of the sweat glands of normal and dry-coated horses. — *J. comp. Path.* **67**, 397-405. [Authors' conclusions modified.] **549**

The sweat glands of normal horses, like apocrine glands, are associated with hair follicles, but, like eccrine glands, they contain glycogen in their secretory cells and produce large amounts of a watery sweat. It is concluded that they represent an intermediate step in the evolution from the simple mucin-secreting apocrine gland to the highly-specialized eccrine gland. In the skin of anhidrotic horses about 10% of the sweat gland units are blocked by keratinous plugs but the rest of the glands seem to be normal. It is thought that the blocked glands are the consequence, rather than the cause of the condition of "dry-coat", which is the result of a physiological inhibition rather than of structural change.

WHITTEM, J. H. & WALKER, D. (1957). "Neuronopathy" and "pseudolipidosis" in Aberdeen-Angus calves.—*J. Path. Bact.* **74**, 281-288. [Authors' summary modified.] **550**

A hitherto undescribed condition in Aberdeen-Angus calves is reported. Clinically, it is characterized by ataxia, intention tremor (a tremor which is intensified by voluntary movement and may cease when the animal is at rest), and failure to grow. Pathologically, there is widespread vacuolation of nerve cells and of reticulo-endothelial cells in the pulp of the lymph-nodes. The aetiology of the disease remains obscure, but it has certain features in common with the lipid dystrophies of man.

JARRETT, W. F. H. (1957). A histochemical study of pulmonary hyaline membranes in cattle.—*J. Path. Bact.* **74**, 444-450. **551**

Hyaline membranes have been found in the respiratory passages of cattle dying with severe respiratory distress, especially in parasitic bronchitis. A histochemical study supported the view that the membranes were derived from transuded plasma.—R.M.

BUTLER, E. J., NISBET, D. I. & ROBERTSON, J. M. (1957). Osteoporosis in lambs in a mining area. I. A study of the naturally occurring disease.—*J. comp. Path.* **67**, 378-396. [Authors' conclusions modified.] **552**

An osteoporotic condition of young lambs which has occurred regularly for many years in an old lead mining area in Southern Scotland is described.

The clinical features are unthriftiness, fragile bones, a stiff gait or lameness, and posterior paralysis, the last named being invariably caused by a lesion in one or more of the lumbar vertebrae which compresses the spinal cord. This also occurs in many of the less severely affected lambs and is the most striking manifestation of a generalized osteoporosis. Lameness may also be caused by fractures and deformities in the long bones. The frequent occurrence of the characteristic lesion of "cappi" [see Bosworth & Stewart (*V.B.* **5**, p. 585)] in affected lambs and the hogs in these flocks is noted. Mineral analysis of the blood and bone of affected lambs gave normal results.

The lead content of the soil and pasture and the blood, liver, kidneys and bones of many affected lambs is unusually high, but the condition does not present a classical pathological picture of chronic lead poisoning. In those lambs with the higher lead values there were

signs of tissue damage known to be caused by lead, viz. basophilic stippling of the red cells and the presence of acidophilic inclusion bodies in the liver and kidney, but these were the only recognizable features of lead poisoning present.

The zinc content of the blood and tissues of affected lambs was also unusually high. The possible involvement of these elements and chelating metabolites such as vitamin C in the aetiology of the disease is discussed.

KÖHLER, H. (1957). Zur sogenannten Oedemkrankheit des Schweines. [**Oedema disease of pigs.**]—*Dtsch. tierärztl. Wschr.* **64**, 37-41. 553

The pathology of oedema disease in 16 pigs examined at Hanover was similar to that described by Timoney [*V.B.* **21**, 1453]. There are 9 photomicrographs.—R.M.

GARRY-ANDERSSON, A.-S. (1956). Förgiftningar och infektionssjukdomar hos mink. [**Poisonings and infectious diseases of mink.**]—*Finsk VetTidskr.* **62**, 563-566, 568-570 & 572-574. [In Swedish.] 554

A general account for practitioners. Under food-poisoning the author included botulism, staphylococcal food-poisoning (with a note on an outbreak found to be due to nitrile poisoning from the use of chloramine to "freshen up" tainted meat), and intoxication from mouldy food. Under metallic poisoning are mentioned zinc from galvanized utensils, lead, copper, sodium chloride. Infectious diseases dealt with are streptococcal, *Pseudomonas* and *Klebsiella* infections, TB. (bovine type from infected meat), anthrax, wound infections with *Cl. welchii*, sporadic infections (salmonella, pasteurella, listeria) and secondary necrosis of the oral cavity resulting from feeding coarsely minced poultry refuse. Streptothricosis has been reported in mink. The only virus disease reported from mink in Finland is (dog) distemper: both the catarrhal and nervous forms occur. Natural resistance varies in different strains, the pastel and Aleutian blue strains being the most susceptible. Inclusion bodies are not always present and ferret inoculation is not available for confirmation of diagnosis in Finland. A suspected outbreak, in which examination for inclusions yielded negative results, was quickly controlled after treatment with egg-adapted vaccine without immune serum. Secondary infections are of little importance in mink.—F.E.W.

WILSON, J. E. (1957). Round heart disease in poultry. — *J. comp. Path.* **67**, 239-250. [Author's conclusions modified.] 555  
A survey of 216 outbreaks of round heart

disease revealed that 174 (80%) were in birds on built-up litter. The disease occurred in pullets kept on built-up litter taken from a field outbreak. The period between exposure and death varied from 42 to 95 days. Two out of 40 pullets died from the disease 24 and 45 days after they had been placed with fowls in an affected deep litter house. Experiments to determine the nature of the causal agent were unsuccessful; the possibility that the disease is infectious is discussed.

ZNOJLOVÁ, V. (1957). Über das Vorkommen von Blutflecken in den Hühnereiern. [**Occurrence of blood spots in hens' eggs.**]—*Arch. Geflügelk.* **21**, 124-131. [English summary.] 556

Blood spots were studied in 5,500 eggs from 4 breeds of fowls. For Rhode Island Reds the incidence of blood spots in the eggs was 14.3%, for Wyandottes 10.4%, for Brown Leghorns 5.5% and for White Leghorns 3.1%. In the 2 last-named breeds there was a correlation between blood spots and high albumen content. There was no correlation between blood spots and shell thickness. The seasonal incidence was at its lowest in the autumn and rose during the winter to reach a peak at the end of February. —M.G.G.

SAUNDERS, L. Z. & MOORE, E. N. (1957). Blindness in turkeys due to granulomatous chorioretinitis. — *Avian Diseases* **1**, 27-36. [Authors' summary modified.] 557

An outbreak of blindness affected 15 turkeys in a flock of 300 in New York State; 12 other cases were seen 4 years later in a flock of 1,000 turkeys in Ohio. The eyes were grossly collapsed and shrunken, and, histologically, lesions of granulomatous chorioretinitis were present. No organisms were cultured from the affected eyes nor were any seen in tissue sections. The lesions did not appear in the offspring of affected birds nor in turkeys penned with the affected birds. The aetiology of the disease was not determined. On the basis of the lesions it appears to be a hitherto-undescribed condition in this species. A somewhat similar inflammation, the cause of which is equally obscure, has been described in sympathetic ophthalmia of man.

BERLIN, N. I., LAWRENCE, J. H. & ELMLINGER, P. J. (1957). Recent advances in the knowledge of total red cell volume, production and destruction.—*Blood* **12**, 147-164. [Interlingua summary.] 558



An account of the use of radioactive isotopes (particularly Fe<sup>59</sup> and C<sup>14</sup>) in clinical haematology.—R.M.

CHIEN, S., LUKIN, L., HOLT, A. P., CHERRY, S. H., ROOT, W. S. & GREGERSEN, M. I. (1957). **The effect of total-body X-irradiation on the circulation of splenectomized dogs.**—*Radiation Res.* **7**, 277-287. [Authors' summary modified.] **559**

Cardiovascular, respiratory, and metabolic studies were carried out on 7 splenectomized dogs before and after exposure to 1000 r total-body X-irradiation. No major functional changes were seen during the first 2 days after radiation. Then repeated vomiting occurred, and the faeces consisted largely of blood and mucus. Ten to 15 hours before death the cardiac output fell, heart rate increased, and mean arterial pressure dropped. The total peripheral resistance rose slowly, but in the terminal stages it fell. Rectal temp. rose several degrees. At autopsy haemorrhagic areas were found, especially in the small intestine which contained a variable amount of bloody fluid. Congestion of the viscera, especially of the liver and lungs, was seen. Comparison of these changes with those produced by severe haemorrhage or traumatic injury indicated that despite superficial similarities there were definite differences.

COLLERY, L. (1957). **Gamma radiography in veterinary practice.**—*Vet. Rec.* **69**, 900-902.

See also absts. 645 (book, diseases of livestock); 646 (book, canine surgery).

## POISONS AND POISONING

OLIVER, W. T. & MACGREGOR, K. L. (1957). **Lead arsenate poisoning in dairy cattle.**—*Canad. J. comp. Med.* **21**, 248-250. **563**

An outbreak of poisoning in a dairy herd of 35 animals is described. Fourteen deaths occurred principally amongst young cattle. The feed was found to contain 37% lead and 11% arsenic in the form of lead arsenate. Tissue analysis indicated that toxicity was due to the arsenical and not the lead radical as has been reported. This is supported by clinical and pathological findings of acute gastro-enteritis. The source of the poison was a bag of insecticide found buried in the granary.—D. MITCHELL.

LUECKE, R. W., HOEFER, J. A., BRAMMELL, W. S. & SCHMIDT, D. A. (1957). **Calcium and zinc in parakeratosis of swine.**—*J. Anim. Sci.* **16**, 3-11. **564**

This gives details of experiments previously reported in brief [*V.B.* **27**, 1185].—R.M.

[Author's summary modified.] **560**

The suitability of iridium 192 and thulium 170 for gamma radiography in veterinary practice is discussed. A study using thulium 170 is described. Suitable exposure times and focal distances are suggested, technical difficulties discussed, and a simple apparatus is illustrated. Three radiographs are presented. Costs of such an apparatus are quoted.

CAMPBELL, E. A. (1957). **The use of paper electrophoresis as an aid to diagnosis.**—*J. comp. Path.* **67**, 345-353. [Author's conclusions copied *verbatim*.] **561**

The values of the various serum protein fractions of normal domestic animals obtained by paper electrophoresis are given, and the changes encountered in various diseases are described. These changes are for the most part non-specific and their interpretation can only be made with full knowledge of the clinical picture. Paper electrophoresis is of great value in following the course of a disease, and for investigating changes in the serum fractions resulting from infection.

MASOUREDIS, S. P. [Edited by.] (1957). **The role of I<sup>131</sup>-labeled proteins in biology and medicine.**—*Ann. N.Y. Acad. Sci.* **70**, 1-152. **562**

This comprises 13 papers read at a conference on the role of radioactive iodine, held at New York in November 1956.—R.M.

CARNAGHAN, R. B. A. & BLAXLAND, J. D. (1957). **The toxic effect of certain seed-dressings on wild and game birds.**—*Vet. Rec.* **69**, 324-325. **565**

Grain treated with dieldrin, and water in which as little as 1½ oz. of such grain had been washed caused the deaths of pigeons and pheasants within 4 to 13 days. P.M. examination revealed congestion of the liver and kidneys, and degeneration of the gizzard lining with ecchymotic haemorrhages of the underlying muscle. Similar lesions were seen in wild birds found dead in the spring of 1956. Grain treated with organic mercury preparations and gamma benzene hexachloride was not toxic.—M.G.G.

BRAS, G., BERRY, D. M. & GYÖRGY, P. (1957). **Plants as aetiological factor in veno-occlusive disease of the liver.**—*Lancet* **272**, 960-962. **566**

*Crotalaria fulva* was fed experimentally to

calves, one of which developed an obliterative hepatovenous lesion after six months. This veno-occlusion was comparable with a lesion seen in sections of liver, sent to the authors by other workers, from cases of poisoning by various species of *Senecio* and *Crotalaria*. It is suggested that herbal infusions made from *Crotalaria* plants ("bush-tea" taken by Jamaicans) "constitute (one of) the aetiological factor(s) in veno-occlusive disease of the liver" previously described by Hill (Trans. 10th Conf. on Liver Injury, Josiah Macy Jr. Foundation, New York; 1951, p.263), Hill *et al.* (*Brit. med. J.*, 1953, Jan. 17th, 117) and Bras & Hill [*V.B.* 26, 3935].

The interrelationship of the vascular lesion and concurrent hepatocellular damage has still to be decided. It may be that more than one toxin is involved, each with a different target area. There may be variations in the relative concentrations of the toxins or in their toxicity, or the toxins may differ in various parts of the plant and at various times of the plant's life.

—L. M. MARKSON.

MARTINČIĆ, M. (1957). Toxische Einwirkungen der *Aristolochia clematidis* auf die Niere des Pferdes. [Toxic action of *Aristolochia clematidis* on the kidney of the horse.].—*Vet. Arhiv.* 27, 51-59. [In German, English and Croat summaries.] 567

M. studied histological sections of kidneys from 28 horses, experimentally poisoned with *Aristolochia clematidis* given as from 8-80% of their hay ration. The primary toxic affinity of *A. clematidis* appeared to be for the tubular system of the renal cortex. High doses produced diffuse, necrotic lesions. The glomeruli were hyperaemic but otherwise practically unchanged. There was serous inflammation of interstitial tissues. In subacute and chronic cases regeneration of the epithelium of the tubules is so characteristic as to be pathognomonic of the condition.

M. stated that apparently not all clinical symptoms and pathological lesions of *A. clematidis* poisoning in horses are known. He speculated on its possible association with abortion, aseptic pododermatitis and periodic ophthalmia, all diseases of a comparatively high incidence

in districts of Yugoslavia where chronic *A. clematidis* poisoning occurs.—E.G.

KEEP, J. M. (1957). Antivenene in a case of snake bite in the dog.—*Aust. vet. J.* 33, 95-96. 568

K. reports a case of a dog which was seen to be bitten by a tiger snake (*Notechis scutatus*). 15 min. after the bite free bleeding of the bite was effected and 70 min. after the bite 3000 units of antivenene was administered, followed an hour later by a further 3000 units. The dog recovered and ate a normal meal two and a half hours later. Symptoms were depression and increased respiration rate. Other cases are mentioned in the discussion.—L. C. LLOYD.

SANGER, V. L., YACOWITZ, H. & MOORE, E. N. (1956). Micropathological changes in an experimental hemorrhagic syndrome in chickens fed sulphaquinoxaline and suggested cause of the disease.—*Amer. J. vet. Res.* 17, 766-770. 569

0.1% sulphaquinoxaline added to a standard chick feed which had been fortified by the addition of vitamin K and lucerne leaf meal induced haemorrhages, focal necrosis, leucocytic infiltration, thrombosis, bone marrow hypoplasia and anaemia. Gross haemorrhages occurred in birds which received 0.05% or 0.15% of the drug. Not all birds so treated were affected, and the syndrome is considered to be allergic in type. The lesions were considered to be similar to those observed in "haemorrhagic disease" under field conditions.—S. BRIAN KENDALL.

PRITCHARD, W. R., DAVIS, O. S., TAYLOR, D. B. & DOYLE, L. P. (1956). Aplastic anemia in chickens fed trichloroethylene-extracted soybean oil meal and failure of this dietary meal to suppress the development of experimental lymphomatosis.—*Amer. J. vet. Res.* 17, 771-777. 570

Chickens fed a diet containing 72.9% trichloroethylene-extracted soya bean oil meal developed aplastic anaemia and clinical signs and haematological and pathological changes indistinguishable from those seen in field cases of "haemorrhagic disease".—S. BRIAN KENDALL.

See also absts. 554 (poisonings and infectious diseases of mink); 573 (liver changes due to ragwort alkaloids); 574 (hepatotoxic action of heliotrine); 581 (drug toxicity in chicks).

## PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease.)

ZILVERSMIT, D. B. & McCANDLESS, E. L. (1957). Fate of intravenously administered glycerol.—*Proc. Soc. exp. Biol., N.Y.* 95,

755-757. [Authors' summary modified.] 571  
Intravenously administered glycerol rapidly disappears from the blood-stream.



Single injections of 6 g. glycerol did not cause excessive urinary excretion of glycerol but 12 g. led to excretion of one-third the dose. Daily infusions of large doses of glycerol produced severe polyuria and in some animals led to tremors and convulsions. These disturbances were not caused by accumulation of glycerol in the blood.

RAKER, C. W. (1957). Use of enzymes in veterinary medicine.—*Ann. N.Y. Acad. Sci.* **68**, 144-150. **572**

A discussion of the therapeutic applications of pancreatic dornase, trypsin, streptokinase and streptodornase.—R.M.

SCHOENTAL, R. & MAGEE, P. N. (1957). Chronic liver changes in rats after a single dose of lasiocarpine, a pyrrolizidine (*Senecio*) alkaloid.—*J. Path. Bact.* **74**, 305-319. [Authors' summary modified.] **573**

A single oral dose of lasiocarpine, a pyrrolizidine (*Senecio*) alkaloid from *Heliotropium* plants, produces severe liver lesions in rats, which sometimes become clinically apparent only several weeks or months after the treatment. Liver biopsy specimens taken at various intervals reveal cytological abnormalities in rats which are surviving in apparent good health more than a year after the ingestion of the alkaloid. Low-protein diet increases the susceptibility of rats to the action of the alkaloid and causes higher mortality. Animals that survive a lower dosage in apparent good health show intense fatty infiltration of the liver, which is not seen in controls pair-fed the same diet.

In view of the reported use of *Heliotropium* plants for medicinal and other purposes, attention is directed to the possible bearing of these results on some liver disorders in man and livestock.

HARRIS, P. N., ROSE, C. L. & CHEN, K. K. (1957). Hepatotoxic and pharmacologic properties of heliotrine.—*Arch. Path.* **64**, 152-157. [Authors' summary modified.] **574**

The LD<sub>50</sub> of heliotrine was determined in mice and rats. Like most *senecio* alkaloids, it has the ability to produce necrosis of the liver in these animals, and in hamsters. The liver of the rat regularly developed a pronounced central necrosis, whereas the response in the liver of the mouse was erratic and less intense. A sublethal dose caused transitory hypoproteinaemia in rats. The drug relaxed smooth muscle slightly and had a weak antispasmodic action. An i/v dose of 5 mg./kg. or

10 mg./kg. had little effect on blood pressure and no effect on heart rate, respiration, and electrocardiogram in a dog and a cat.

BABCOCK, M. J. & TAYLOR, M. W. (1957). Effect of meprobamate on growth and feed efficiency of chickens.—*Poult. Sci.* **36**, 485-487. [Authors' summary modified.] **575**

Meprobamate depressed the growth of White Leghorn cockerels at concentrations of 1.4% and over in the food, but had no other visible effect.

RITCHIE, H. E. (1957). Chlorpromazine sedation in the pig.—*Vet. Rec.* **69**, 895-900. [Author's summary modified.] **576**

Chlorpromazine hydrochloride, as a 5% solution, was administered either by the i/v or the deep i/m route to 30 pigs. The effects are recorded and discussed.

HOE, C. M. & WILKINSON, J. S. (1957). A diluting effect of chlorpromazine hydrochloride on the circulating blood of dogs.—*Vet. Rec.* **69**, 734-735. [Authors' summary modified.] **577**

Haematological examinations in 20 dogs given chlorpromazine and atropine, and in 15 given atropine alone revealed a constant but variable haemodilution resulting from chlorpromazine administration.

RODRIGEZ Y FELIZ, M. D. (1957). Contribución al estudio de las asociaciones antibióticas: sinergismo, antagonismo y efecto aditivo. [Study of combinations of antibiotics.]—*Bol. Inf. Cons. Col. vet. Esp.* **2**, 25-33. **578**

Combinations of two of the following antibiotics: penicillin (I), dihydrostreptomycin (II), aureomycin (III), chloromycin (IV), terramycin (V) and bacitracin (VI) were tested *in vitro* against 3 strains each of *Salmonella cholerae-suis*, *S. abortus-ovis*, *S. pullorum*, *Escherichia coli* from pigs, *Erysipelothrix rhusiopathiae* and *Micrococcus gangrenae ovis* (*Staph. pyogenes*). The effects of such mixtures varied considerably, but the following conclusions were drawn regarding their practical use: I, II & VI often show synergism, but never antagonism to each other, while III, IV & V are neither mutually synergic nor antagonistic, but occasionally (*E. rhusiopathiae*) simply additive. Antagonism often occurs where one of the second group of antibiotics (III, IV & V) is added to one of the first group (I, II & VI) in the presence of bacteria sensitive to the first group, while in the presence of bacteria sensitive to the second group there is no antagonism, but often synergism.

—G. P. MARSHALL.

SUAREZ, F. P. (1957). Investigación farmacológica y farmacodinámica comparativa de la acción tóxica experimental entre los datos de estreptomycina y de dihidroestreptomycina y los pantotenatos de estreptomycina y de dihidroestreptomycina. [*Pharmacology and toxicology of streptomycin and dihydrostreptomycin, and the pantothenates of these antibiotics.*—*Bol. Inf. Cons. Col. vet. Esp.* 2, 5-24. 579]

Tests in various laboratory animals showed that both the acute and chronic toxicity of streptomycin and dihydrostreptomycin sulphates can be substantially reduced by replacing them with the pantothenates of these antibiotics. No more than 20-40% of the latter need be mixed with the former, in order to obtain this improvement, which was shown in relation to allergenicity and effects on blood pressure, smooth and striated muscle, post-rotatory nystagmus and body weight.—G. P. MARSHALL.

VELU, H. & LUTZ, A. (1957). Remarques sur la toxicité de quelques antibiotiques en particulier de la streptomycine chez le cobaye. [*Toxicity of some antibiotics, particularly streptomycin, for the g.pig.*—*Rev. Immunol.* 21, 165-173. 580]

During prophylactic and curative tests with oral streptomycin in tuberculous g.pigs the authors noted that a minute proportion of the dose is absorbed from the gut in this species—enough to potentiate the antitubercular action of isoniazid. Contrary to some other antibiotics streptomycin produces no signs of toxicity in the g.pigs, even upon prolonged oral administration in therapeutic dosage; it shares this lack of toxicity with the easily absorbed chloramphenicol. The authors therefore concluded that the relative degree of absorption from the gut—taken by itself—does not suffice to explain the differences in toxicity noted with various orally administered antibiotics in this species.

—G. P. MARSHALL.

NEWBERNE, P. M. & BUCK, W. B. (1957). Studies on drug toxicity in chicks. III. The influence of various levels of nicarbazin on growth and development of chicks.—*Poult. Sci.* 36, 304-312. 581

When nicarbazin was fed to young chicks at 0.025% of the food and at higher concentrations, symptoms of toxicity were observed. These included loss in weight, inanition, ataxia, and a stilted gait. Changes in blood cellular elements included a reduction in heterophiles. This was accompanied by thrombocytosis. Histologically there was degeneration of the liver cells

and renal epithelium. Changes were seen in lymphoid tissues over the body. Ossified nodules were found in the lung tissues. Under the conditions of the experiments recorded, nicarbazin at 0.0725% of the food did not promote or depress growth, but it is concluded that there is a narrow margin of safety.—S. BRIAN KENDALL.

STAŚKIEWICZ, G. & ROMANOWSKA, M. (1957). Badania nad wpływem witaminy D<sub>2</sub> na poziom wapnia i nieorganicznego fosforu w surowicy koni. [*Effect of vitamin D<sub>2</sub> on calcium and inorganic phosphorus content of equine serum.*—*Méd. vét., Varsovie* 13, 409-413. [In Polish, English and Russian summaries.] 582]

14 horses including 4 controls were used. A single i/m administration of 1,080,000 i.u. of vitamin D<sub>2</sub> caused an elevation of the calcium and inorganic phosphorus values. After 14 days the Ca level in the experimental horses returned to normal but the inorganic P remained 0.86 mg.% higher than in the controls.—M. GITTER.

RONCALLI, R. (1957). I corticosteroidi in medicina veterinaria. [*Corticosteroids in veterinary medicine.*—*Veterinaria, Milano* 6, 101-113. [English, French and German summaries.] 583]

A review (142 references) of the reported uses of cortisone, hydrocortisone (acetate, cyclopentylpropionate and sodium succinate), prednisone, prednisolone and 9- $\alpha$ -fluorohydrocortisone in various conditions in large and small animals.—G. P. MARSHALL.

ARCHER, R. K. (1957). The mechanism of eosinopenia produced by ACTH and corticoids in the horse.—*J. Path. Bact.* 74, 387-395. [Author's summary copied *verbatim*.] 584]

As has been previously reported by other workers, no direct lytic effect of corticoids upon eosinophil leucocytes could be demonstrated.

Injections of hydrocortisone and ACTH, in doses sufficient to produce peripheral eosinopenia, produce no change in eosinophil content of the bone-marrow of horses. Withdrawal of the agents is followed after about 12 hours by eosinophilia first of the bone-marrow and, later, of circulating blood.

The hypothesis is advanced that the peripheral eosinopenia following corticoid injections may be attributable to the decrease in circulating histamine which follows such injections.

FITZPATRICK, R. J. (1957). Uterine response to adrenaline in intact cows and sheep.—*J.*



*comp. Path.* **67**, 223-238. [Author's conclusions modified.] **585**

The response of the myometrium to adrenaline, given i/v, was studied in cows and sheep in the second half of pregnancy and in non-pregnant cows. The characteristic response is diphasic, a short contraction being followed by a longer inhibition. In the non-pregnant cow luteal activity is associated with a predominantly contractile response. Oestrogen dominance is associated with a predominantly inhibitory response. The response changes qualitatively during pregnancy in both species. At mid-pregnancy a contractile component may be recognized but for most of the second half of pregnancy the response is inhibitory. About the time of parturition contractile responses reappear. These results are discussed in relation to previous work in these and other species. The validity of claims that the nature of myometrial response to adrenaline differs fundamentally between species is disputed.

ZARROW, M. X. & BRENNAN, D. M. (1957). **Increased concentration of water in uterus of the rat following treatment with relaxin.**—*Proc. Soc. exp. Biol.*, N.Y. **95**, 745-747. [Authors' summary modified.] **586**

Relaxin increased the concentration of water in the uterine tissue of the immature rat. Maximum hydration was obtained at 6 hours following administration of the hormone. The minimum effective dose is 1 g.pig unit and the maximum response occurs after 10 g.pig units. In contrast to the effect seen after oestradiol administration, no secondary rise in uterine water content and no increase in dry weight was observed. Pretreatment with oestrogen is not necessary for this action of relaxin on the water content of the uterine tissue.

*See also absts.* 329 (therapy of TB. in monkeys); 336 (diamine, a disinfectant in TB.); 344 (nitrofurans); 364 (ovine brucellosis); 374 (ovine leptospirosis); 393 (antifungal activity of pentamidine and stilbamidine); 398 (porcine eperythrozoonosis); 399 (bovine trypanosomiasis); 401 (chlortetracycline in coccidiosis of calves); 415 (goat pox); 470-474 (insecticides); 476, 480, 485 & 489-490 (anthelmintics); 547 (electrolytes in calf scour); 588 (antivenene); 589 (sulphaquinoxaline).

## PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

I KIBLER, H. H. & BRODY, S. (1956). **Environmental physiology and shelter engineering, with special reference to domestic animals.** XXXVIII. Influence of diurnal temperature cycles on heat production and cardiorespiratory activities in Holstein and Jersey cows.—*Res. Bull. Mo. agric. Exp. Sta.* No. 601. pp. 28. **589**

II. DALE, H. E., BURGE, G. J. & BRODY, S. (1956). **Environmental physiology and shelter engineering, with special reference to domestic animals.** XXXIX. Environmental tem-

HARE, W. C. D. (1957). **A regional method for the complete anaesthetization and immobilization of the bovine eye and its associated structures.**—*Canad. J. comp. Med.* **21**, 228-234. **587**

The oculomotor, trochlear, ophthalmic, zygomatic accessory, zygomatic and abducens nerves are blocked within the apex of the periorbita, rostral to the foramen orbitorotundum and medial to the pterygoid crest, using a straight 7-8 inch 14 gauge needle and 15 ml. of 2.5% procaine. The optic nerve is not anaesthetized. To immobilize the eyelids the auriculopalpebral nerve is blocked as it crosses the zygomatic arch. Detailed anatomical considerations with illustrations are given. The author believes that this method is easier and more reliable than the Peterson block.—D. MITCHELL.

KING, A. S. & BIGGS, P. M. (1957). **General anaesthesia in *G. domesticus* for non-survival laboratory experiments.**—*Poult. Sci.* **36**, 490-495. [Authors' summary modified.] **588**

A technique of injecting i/v a 43% aq. soln. of urethane is described. The minimum anaesthetic dose for adult hens was about 1.5 g./kg. body wt. The acute toxic dose is probably much higher than this. Up to 9 hours of anaesthesia at the required depth were obtained. The breathing rate fell, but less so than with barbiturates. Reports in the literature suggest that urethane depresses arterial pressure more than the barbiturates. Intravenous urethane is probably unsuitable for clinical surgery chiefly because of its prolonged action and possible toxic effects. But for non-survival experiments in fowls it appears to be superior to other methods, unless a high arterial pressure is required.

perature and blood volume.—*Ibid.* No. 608. pp. 20. [Abst. from authors' summaries.] **590**

I. Lactating Jersey and Holstein cows were exposed to diurnal temperature cycles of the following amplitudes: 10-40°; 40-70°; 70-100°; 50-100° and 60-110°F., at vapour pressures ranging from 1-25 mm. Hg. Heat production appeared to be adjusted to the mean temp. within a given diurnal cycle, but it was also influenced by acclimatization effects. Respiratory vaporization was an important means

of heat dissipation at high temperatures. The ratio of heat lost by this means to heat production tended to increase with temp. and with feeding. Pulse rate tended to increase with rising temp. and with feeding, and to decrease with falling temp. and between feeding. Although rectal temp. and respiration rate generally followed the cyclic pattern of the diurnal changes in ambient temp., there was a varying lag in their response.

II. Cows exposed to the same diurnal temperature cycles had increased serum and blood volumes at the higher temperature ranges. Total body water, as determined by the antipyrine method, varied between 45 and 75% of body wt., but consecutive determinations on a given cow were very inconsistent. There was no consistent change in the water content of serum with the different temperature rhythms.

LYNE, A. G. (1957). **The development of the epidermis and hair canals in the Merino sheep foetus.** — *Aust. J. biol. Sci.* 10, 390-397. [Author's summary modified.] 591

The development of the epidermis and hair canals was studied in Merino sheep foetuses ranging in age from 69 days to birth. The epidermis from several Merino lambs and adults was also examined. The keratinization of the epidermis, which takes place after the emergence of the first wool fibres, is described in relation to the development of the wool follicles. The development of hair canals in primary and secondary wool follicles in Merino sheep has been described for the first time.

HEMMINGS, W. A. & OAKLEY, C. L. (1957). **Protein selection in the yolk-sac splanchnopleur of the rabbit: the fate of globulin injected into the foetal circulation.** — *Proc. roy. Soc. Ser. B.* 146, 573-579. [Authors' summary modified.] 592

Globulins originating in another species are treated in the circulation of the rabbit in the same way as is homologous globulin. 24 hours after i/v inj. of mixed antitoxin preparations the relative concentrations of rabbit and bovine antitoxins in the foetal sera are unchanged. There is no evidence of differential treatment of homologous and heterologous protein after entry to the foetal circulation. Since serum globulins taken up from the uterine cavity of the rabbit by the yolk-sac splanchnopleure reach differential concentrations in the foetal serum depending on the species of origin of the globulin, selection must occur during passage of the protein through the tissues of the splanchnopleure itself.

The rate of removal of globulin from the foetal circulation is not more rapid than in the adult. No evidence could be found of any passage of intact globulin across the placenta from the foetal to the maternal circulation.

MCCANCE, R. A. & WIDDOWSON, E. M. (1957). **Physiology of the newborn animal.** — *Lancet* 273, 585-589. 593

The new-born animal is commonly thought of as weak and helpless. Yet its ability to survive in the face of temporary cold and anoxaemia is great. In fact the fall in body temp. which accompanies anoxaemia increases the chances of survival. Homoeostasis is partly maintained by the animal's capacity for growth. Nine-tenths of the protein nitrogen in the food of the new-born piglet is retained, thus reducing the dependence on renal function. The new-born should therefore be regarded as strong provided it is left within its natural environment. —M.G.G.

BOGDASHEV, N. F. & ELISEEV, A. P. (1957). **[The mammary glands of farm animals.]** pp. 224. Moscow (& Leningrad): Gosud. izd. sel'skokhoz. lit. 2nd Revised Edit. 4r.45k. 594

This monograph describes development, anatomy and physiology. Particular attention is paid to blood and nerve supply and lymphatic drainage in the cow's udder, and there are many illustrations, some in colour. A subsequent chapter deals in rather less detail with the morphology of the mammary glands of goats, sheep, reindeer, camel, mares, sows and lab. animals.

The section on the physiology of lactation occupies about one-fifth of the book, so that it is dealt with quite briefly. Finally there is a chapter of practical value on the care of the udder during milking. A large amount of Russian literature is reviewed, and there appears to be a genuine, if incomplete, attempt to incorporate the work of "foreign" authors. The book costs 3s. 9d. in the United Kingdom. —R.M.

MIXNER, J. P. & TURNER, C. W. (1957). **Strain differences in response of mice to mammary gland stimulating hormones.** — *Proc. Soc. exp. Biol., N.Y.* 95, 87-89. [Authors' summary modified.] 595

Four strains of albino mice were studied as to mammary lobule-alveolar growth responses to anterior pituitary preparations and progesterone. Statistically significant differences in strain responses were found. The Schwing and Swiss strains were superior to the Kansas and Sutter strains in their responses to ant. pituitary prep-



arations: the Swiss, Kansas and Sutter strains were all inferior to the Schwing strain in response to progesterone.

BARKHAM, P., TOMLIN, S. C. & ARCHER, R. K. (1957). **Comparative coagulation studies on horse and human blood.**—*J. comp. Path.* **67**, 358-368. [Authors' conclusions modified.] 596

Horse and pony blood showed a deficiency of anti-haemophilic globulin activity. The Christmas factor activity appeared to be unimpaired. The activity of the prothrombin, factor V, factor VII and the thrombin-fibrinogen reaction in horse plasma was at least equal to that of human plasma. Horse platelets were thromboplastically more active when combined with horse serum than with normal human serum, but appear less active than human platelets. Ponies had higher platelet counts than horses. Species differences were found in the activity of the brain thromboplastins (lipoprotein) but not in that of the brain lipids. Human and horse plasmas were equally active in the presence of snake venom thromboplastin. The possible significance of the findings is discussed with reference to their biological implications.

FANTL, P. & MARR, A. G. (1957). **Prothromboplastin activities of some mammalian plasmas and sera.**—*Aust. J. biol. Sci.* **10**, 351-359. [Authors' summary modified.] 597

The rate of formation of thromboplastin was determined in several mammalian plasmas and sera. A striking difference in stability of blood thromboplastin was observed. Catechol had a stabilizing effect on blood thromboplastin.

$\alpha$ - and  $\beta$ -prothromboplastin (anti-haemophilic factor and PTC or Christmas factor) showed no species specificity when combined with heterologous clotting components. The plasma of man, rabbit, g.pig, and rat showed a similar range of  $\alpha$ - and  $\beta$ -prothromboplastin activities. Dog plasma showed a higher activity.

In addition to  $\alpha$ - and  $\beta$ -prothromboplastin other factors are required for efficient thromboplastin formation; one or more of these are present in serum and these show species specificity.

SCHULTZE, A. B. (1957). **Condition in dairy calves and level of circulating eosinophils.**—*J. Dairy Sci.* **40**, 672-676. [Author's summary modified.] 598

Eosinophile counts in 45 calves, 6-17 months old, revealed that the fattest calves usually had the highest counts.

STORTI, E., BELLESIA, L. & LUSVARGHI, E. (1957). **The osmotic resistance of leukocytes**

**in peripheral blood and splenic circulation of the rabbit.**—*Blood* **12**, 829-833. [Interlingua summary. Authors' summary modified.] 599

By studying the resistance of leucocytes to hypotonic saline solution it was found that leucocytes leaving the spleen are much less resistant than those entering it. It seems probable that this change in resistance is the manifestation of one of the mechanisms by which the spleen regulates the life span of leucocytes.

WEBSTER, W. M. & CRESSWELL, E. (1957). **New evidence on the regurgitation mechanism.**—*Vet. Rec.* **69**, 527-528. 600

The authors studied 15 tracheotomized sheep and one calf for periods of up to 9 months and observed no interruption in the rumination pattern whether the tracheal tube was patent or not. They therefore no longer believe that a negative thoracic pressure is essential to regurgitation. They put forward a tentative hypothesis on the regurgitation mechanism based on the muscular contraction of the oesophagus itself.

—E. J. CASTLE.

TSUDA, T. (1957). **Studies on the absorption from the rumen. I. Surgical operation of forming the miniature rumen. II. Absorption of several organic substances from the miniature rumen of the goat.**—*Tohoku J. agric. Res.* **7**, 231-239 & 241-256. [In English.] 601

I. Details are given of an operation to prepare a pouch, in the dorsal sac of the rumen of a goat, similar to the original Pavlov pouch. A diagram and 10 well labelled photographs are given.

II. To study the rate of absorption by the rumen of various substances, solutions of these were introduced into the rumen pouch and samples taken every hour for 4 hours. Changes in concentration of the solution were then estimated. Ethyl alcohol, acetone and acetic, propionic and butyric acids were absorbed the most rapidly, and then glucose, lithium-lactate and salts of the fatty acids. Urea, ascorbic acid and glycine were not well absorbed. Glucose was the only substance to be absorbed into the blood against a concentration gradient. Monoisoacetate inhibited the absorption of glucose, but not of the fatty acids. Sodium fluoride and mercuric chloride failed to inhibit absorption of glucose or the fatty acids.—E. J. CASTLE.

INGLE, D. J. & BAKER, B. L. (1957). **Histology and regenerative capacity of liver following multiple partial hepatectomies.**—*Proc. Soc. exp. Biol., N.Y.* **95**, 813-815. [Authors' summary copied verbatim.] 602

The capacity of liver to regenerate was maintained in rats which were subjected to partial hepatectomy 12 times within a period of one year. At the end of the experiment, only minor cytological changes were observed in the regenerated liver and there was no neoplasia.

TAMATE, H. (1957). **The anatomical studies of the stomach of the goat. I. The post-natal development of the stomach with special reference to the weaning and prolonged suckling.**—*Tohoku J. agric. Res.* 7, 209-229. [In English.] 603

Details of the size, appearance and position of the stomach, intestines, liver and spleen of 31 Saanen goats from 1 to 72 days of age, are given. 18 goats were fed on all milk diet and 13 on grass. The rumen became greatly enlarged once weaning commenced, and rumen development was retarded if the goats were not weaned until after 25 days of age. There was malformation of the rumen in goats weaned before 16 days and in those fed milk alone after 53 days. Twelve clearly labelled photographs are given.

—E. J. CASTLE.

See abst. 397 (methanogenic rumen bacteria).

EL'TSOV, S. G. & NIKIFOROV, N. I. (1956). **[Topographical anatomy of the abdominal wall and ovary in the pig.]**—*Trud. mosk. vet. Akad.* 10, pp. 108-119. [In Russian.] 604

The authors gave details of the structure, blood vessels and nerves of the abdominal wall. The position of the ovaries in a gilt aged 6 months corresponded to the intersection of two imaginary lines, a horizontal line through the tuber coxae, and a vertical line from the middle of the body of the 5th lumbar vertebra. A vertical incision through this intersection was suitable for ovariectomy.—S. TERLECKI.

HOUCK, J. C. & PEARCE, R. H. (1957). **A new bovine testicular mucopolysaccharase.**—*J. biol. Chem.* 226, 267-276. [Authors' summary modified.] 605

Crude bovine testicular extracts contain an enzyme active upon chondroitin sulphate A but not upon hyaluronate. Preliminary evidence suggests that this enzyme attacks the terminal  $\beta$ -galactosaminidic bond of the substrate.

## PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

ROWLEY, I. (1957). **Field enclosure experiments on the technique of poisoning the rabbit, *Oryctolagus cuniculus* (L.). I. A study of total daily take of bait during free-feeding.**—*C.S.I.R.O. Wildl. Res. Aust.* 2, 5-18. 606

Similar groups of individually marked and easily recognizable rabbits were placed in small enclosures containing artificial warrens. After 3 weeks, when the rabbits appeared to be behaving normally, their reactions to normal poisoning procedure were watched.

One standard procedure to poison rabbits is to draw a furrow across the animals' feeding or movement area and to "free feed" with a suitable bait placed in the furrow, until it is thought timely to feed poisoned bait. Experiments showed that rabbits in enclosures with a furrow took to the bait more readily but there was a lapse of several days before the bait was

being eaten in any quantity. However, once rabbits had commenced eating the bait (carrots), even after an interruption of 7 weeks they resumed eating it immediately at nearly the same level as previously. The explanation and implications of these findings are discussed. The experiments were terminated by poisoning with either sodium fluoracetate or strychnine, the former giving the more consistent kill.—M. D. MURRAY.

DUNNET, G. M. (1957). **Notes on avian predation on young rabbits, *Oryctolagus cuniculus* (L.).**—*C.S.I.R.O. Wildl. Res. Aust.* 2, 66-68. 607

Evidence is presented to show that the avian predators were selective and were only taking rabbits weighing between 350 and 450 g.

—M. D. MURRAY.

See also absts. 356 (S. manhattan in milk); 370 (meat inspection aspect of ovine brucellosis); 380 (clostridia from tinned meat); 395 (microbial content of bedding materials and milk hygiene); 425 (orf in man); 449-452 (Q fever); 454 (Q fever in conserved meat).

## LIVESTOCK HYGIENE

ITTNER, N. R., KELLY, C. F. & BOND, T. E. (1957). **Cooling cattle by mechanically increasing air movement.**—*J. Anim. Sci.* 16, 732-738. [Abst. from author's sum-

mary.] 608

Increasing air movement by means of an electric fan increased the daily gains of cattle reared in wooden pens in California.



THOMPSON, H. J. (1957). **Environmental physiology and shelter engineering; with special reference to domestic animals. XLI. Influence of humidity and wind on heat loads within dairy barns.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 618, pp. 28. 609

In experiments to determine the effects of humidity and wind upon vaporization and heat dissipation, 2 insulated climatic test rooms each fitted with 6 stalls 4 ft. wide were used. Tests averaged 2 weeks' duration on each of 8 groups of 6 cows. The total heat load was defined as the heat dissipated within the stable, being the heat picked up by the ventilating system with deductions for heat added by the lamps, equipment and personnel.

Below 50°F., humidity had little effect on either the total heat or the water vapour removed by ventilation. Generally, vaporization decreased when humidity increased. At temp-

eratures below 55°F., increasing winds, from  $\frac{1}{2}$  to 10 m.p.h., increased vaporization, and above 55°F. increasing winds decreased vaporization. Non-evaporative heat dissipation was practically nil when barn air temperatures approximated animal surface and body temperatures.—E.V.L.

LARRABEE, W. L. & SPRAGUE, M. A. (1957). **Preservation of forage nutrients as silage in gas-tight enclosures of polyvinyl chloride plastic.**—*J. Dairy Sci.* 40, 800-809. [Authors' summary modified.] 610

Gas-tight, polyvinyl chloride plastic film was used to enclose stacked forage, exclude air, limit respiration, and encourage fermentation. A high-quality silage was produced, with low seepage and fermentation losses, and no surface spoilage. Fifteen units have been used on farms, and proved practicable.

See also abst. 395 (microbial content of bedding materials and milk hygiene).

## REPRODUCTION AND REPRODUCTIVE DISORDERS

MANN, T., SHORT, R. V., WALTON, A., ARCHER, R. K. & MILLER, W. C. (1957). **The 'tail end sample' of stallion semen.**—*J. agric. Sci.* 49, 301-312. [Authors' summary modified.] 611

Measurements of volume, density of spermatozoa, ergothioneine, sulphhydryl groups and citric acid were made on 100 'tail-end samples' (post-coital-penis drips) from 13 thoroughbred stallions. In addition, a few analyses were made of post-coital vaginal samples. The composition of the 'tail-end samples' differed substantially from that of the whole ejaculates, the former samples lacking the characteristic gelatinous appearance of normal stallion semen, and having a much lower content of spermatozoa, ergothioneine (sulphhydryl groups) and citric acid than an average stallion ejaculate.

As the variations in volume and composition of the 'tail-end samples' collected from different stallions or from the same stallion on different occasions were considerable, it is unlikely that prognostication of fertility could be usefully based on the analysis of such samples.

ROSE, M. & MAUPOUMÉ, R. (1957). **Sur l'emploi de l'eau de mer diluée dans l'insemination artificielle des bovins. [Use of diluted sea water in a diluent for bull semen.]**—*C.R. Acad. Sci., Paris* 245, 382-383. 612

Sea water, filtered through a collodion membrane and diluted 3-6 times with distilled water,

was used to replace sodium citrate solution in an egg-yolk diluent, with good results.—R.M.

FOSGATE, O. T., ASCHBACHER, P. W., SMITH, V. R. & TYLER, W. J. (1957). **Surface-active agents as constituents of diluents for deep freezing of bovine spermatozoa.**—*J. Dairy Sci.* 40, 647-651. [Authors' summary modified.] 613

Surface-active agents were added to the glycerolated portion of a semen diluent. Of the 5 agents tested Tween 80 protected most against damage from freezing and thawing. After 7 days of storage at -79°C. the samples containing Tween 80 had the most motile cells. The loss in motile cells with storage was greater for samples containing surface-active agents than for controls. The effect of surface-active agents on the retention of fertility is not known.

ETGEN, W. M., LUDWICK, T. M., RICKARD, H. E., HESS, E. A. & ELY, F. (1957). **Use of mechanical refrigeration in preservation of bull semen.**—*J. Dairy Sci.* 40, 774-778. [Abst. from authors' summary.] 614

Mechanical refrigeration was better than dry-ice in preserving semen for 24 weeks. Samples were transferred from mechanical refrigeration (-96°C.) to dry ice, and *vice versa*, without reducing their quality below that obtained by dry-ice refrigeration.

- PARKES, A. S. (1957). The development in Great Britain, 1949-52, of the technique of preserving bull semen in the frozen state.—*Vet. Rec.* **69**, 463-464. **615**  
A review of the work of the National Institute for Medical Research in this field.—R.M.
- BIALY, G. & SMITH, V. R. (1957). Freeze-drying of bovine spermatozoa.—*J. Dairy Sci.* **40**, 739-745. [Editor's note copied *verbatim*.] **616**  
Freeze-drying as a method of preserving spermatozoa was not successful. However, the experimental approaches have not been exhausted.
- WALTON, A. (1957). The initiation of motility in mammalian spermatozoa.—*Proc. Soc. Stud. Fertil.* **8**, 53-57. [Author's conclusions and summary slightly modified.] **617**  
Provided irreversible inhibitory changes in the carcass have not developed spermatozoa removed *post mortem* from the epididymis are capable of attaining full activity, equalling or possibly exceeding that of ejaculated spermatozoa. Activity can be maintained either from the oxidation of 'endogenous' substrates or from the anaerobic glycolysis of glycolysable sugars, but the greatest activity is obtained when both oxygen and fructose are present together. Reversible and almost complete inhibition of motility can be produced *in vitro* by withholding both oxygen and fructose. Absence of fructose and a low tension of oxygen may prevail in the epididymis but exact measurements and a more complete knowledge of the reversibility of anoxia and deprivation of glucolysable substrate are required before it can be assumed that these are primary factors in the preservation of spermatozoa in the epididymis.
- MACDONALD, L. E. & SAMPSON, J. (1957). Intraperitoneal insemination of the heifer.—*Proc. Soc. exp. Biol., N.Y.* **95**, 815-816. [Authors' summary modified.] **618**  
Intraperitoneal insemination of 4 heifers a total of 6 times resulted in one pregnancy. This experimental method is suggested as a means of studying the physiological processes leading to fertilization.
- ANTLIFF, H. R. & YOUNG, W. C. (1957). Internal secretory capacity of the abdominal testis in the guinea pig.—*Endocrinology* **61**, 121-127. [Abst. from authors' summary.] **619**  
No differences were observed in sexual behaviour and in the appearance of the epididymis, seminal vesicles, and prostate between g.pigs cryptorchid from birth and normal g.pigs.
- GRANT, J. H. (1957). The effects of unilateral orchidectomy on the rat testis.—*Proc. Soc. Stud. Fertil.* **8**, 27-35. [Author's summary copied *verbatim*.] **620**  
The enlargement of the remaining testis following unilateral orchidectomy is described, and its probable mechanism discussed.
- SILLER, W. G. (1957). Embolic displacement of viable testicular tissue in a Brown Leghorn cockerel.—*J. comp. Path.* **67**, 263-266. [Author's conclusions copied *verbatim*.] **621**  
A description is given of a generalized embolic dissemination within the venous blood stream to a number of non-testicular organs of apparently viable seminiferous cells, including fully developed spermatozoa. The possible aetiology of this phenomenon is discussed.
- OLDS, D. & VANDEMARK, N. L. (1957). Composition of luminal fluids in bovine female genitalia.—*Fertil. & Steril.* **8**, 345-354. [Authors' summary modified.] **622**  
Reproductive organs were obtained from 58 cows at slaughter. The stage of the oestrous cycle was known in 19 of them. The nature of luminal fluids varied considerably with the stage of the cycle: during luteal stages, uterine fluid contained about 400 million epithelial-cell nuclei/ml. Results of chemical analyses were reported.
- LARSON, B. L. & KENDALL, K. A. (1957). Changes in specific blood serum protein levels associated with parturition in the bovine.—*J. Dairy Sci.* **40**, 659-666. [Authors' summary modified.] **623**  
Studies in 8 cows revealed a fall of 10% to 30% in the protein content of the serum beginning 4 weeks before parturition. This drop was due to a loss of  $\beta_2$ - and  $\gamma_1$ -globulins and some  $\alpha$ -globulins; the content of serum albumin and  $\beta_1$ - and  $\gamma_2$ -globulins did not change appreciably. The concentration of  $\beta_2$ - and  $\gamma_1$ -globulins in the blood serum rose until the fourth week before parturition, whereas the concentration of  $\alpha$ -globulins reached its maximum at the onset of pregnancy and then slowly decreased. It appears that immune  $\beta_2$ - and  $\gamma_1$ -globulins accumulate in the blood until they are drawn upon for the colostrum.
- GORSKI, J., ERB, R. E. & BRINKMAN, D. C. (1957). Estrogenic activity in the urine of the non-pregnant, pregnant and ovariectomized bovine.—*J. Anim. Sci.* **16**, 698-702. [Authors' summary modified.] **624**  
Bioassays in female rats indicated oestrogenic activity in urine from non-pregnant cows.



Oestrogenic activity in the urine of pregnant cows was much higher. Urine from an ovariectomized cow had very little oestrogenic activity.

COWIE, R. S. & MUIR, R. W. (1957). **The use of quinine in the treatment of pyometra in the bitch.**—*Vet. Rec.* 69, 772-774. [Authors' summary modified.] 625

Pyometra in 52 bitches was successfully treated with quinine sulphate. The initial dose was 150-600 mg., followed by half this quantity daily for 7 to 10 days. Six of the cases are described. It is considered that quinine sulphate is an efficient, cheap, and easily administered means of treating pyometra.

BAIN, A. M. (1957). **Estrus and infertility of the Thoroughbred mare in Australasia.**—*J. Amer. vet. med. Ass.* 131, 179-185. [Author's conclusion modified.] 626

See also *absts.* 327 (abortion in cows by avian tubercle bacilli); 396 (effect of bacteria on metabolism in bull spermatozoa); 423 (bovine virus vaginitis).

## ZOOTEC HNY

D'ARCES, P. J. & ARBIB, G. (1956). Contribution à l'étude de l'adaptation des bovins de race européenne aux climats chauds. [Adaptation of cattle of European breeds to hot climates.] — *Ann. Inst. agric. Algér.* 9, 1-18. 627

Cows of the Eastern Spotted, Brown Alpine and Friesian breeds were studied on 3 farms in Algeria. The maximum environmental temp. ranged from 26° to 39°C. and the humidity from 30-99%. This climate did not cause severe hyperthermia, neither did it affect lactation or the fat content of the milk. These results were contrary to those expected; further work is in progress.—R.M.

BLINCOE, C. (1956). **Environmental physiology and shelter engineering; with special reference to domestic animals. XL. Design and testing of a hair measurement beta-gauge.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 616, pp. 20. 628

The operation of the absorption type beta gauge is based on the fact that the absorption of beta particles is dependent only on the weight per unit area of absorber; by measuring the percentage of beta particles which penetrate a given layer of hair, the weight per unit area is easily found. This gauge consists essentially of a Geiger counter mounted on a platform 4 in. × 1½ in. under which is attached in the same plane

The manifestations of oestrus in the mare in Australasia are described. The prolonged spring oestrus of barren mares is treated as a separate physiological entity. The onset of postparturient oestrus varied, only 56% starting by the ninth day. Fertility at this oestrus compared favourably with that of other heat periods. The survival period of spermatozoa in the female genital tract is considered to be 5-6 days. An inappropriate time of mating as a factor in infertility is doubted. Anoestrus and early abortion (which is high, 12%) are both important causes of infertility. Anoestrus was especially recalcitrant to treatment in mares with foals. The cause of early abortion is not known. Some extra-ovarian source of oestrogens is suggested, since oestrus can occur with inadequate follicular development and the prolonged spring oestrus in barren mares occurs without corresponding cervical and vaginal changes. In many cases endometritis apparently suppresses oestrus.

but at a distance of 2 in. a stainless steel rod bearing near its end the radioisotope, either promethium<sup>147</sup> or thallium<sup>204</sup>, the source of the beta radiation. As the rod slides under the hair, in contact with the skin, the beta particles are emitted upwards through the hair to the Geiger counter which indicates the absorber count rate; the corresponding weight of hair per unit area is read off a calibration chart. The gauge was found by test to have an accuracy of  $\pm 4.4\%$ . —E.V.L.

CLEGG, M. T. & CARROLL, F. D. (1957). **A comparison of the method of administration of stilbestrol on growth and carcass characteristics of beef steers.**—*J. Anim. Sci.* 16, 662-670. [Authors' summary modified.] 629

Subcutaneous implantation of different doses of stilboestrol was compared with the oral administration of 10 mg. daily. A 15 mg. pellet implanted under the skin of the ear produced the same response as feeding 10 mg. daily throughout the fattening period: the steers grew 15% faster, converted food 10% more efficiently, had similar increases in the size of the teats, seminal vesicles and prostate, while carcass grade and composition were not affected. Histological studies indicated similar physiological effects. Steers implanted with 30 to 60 mg. grew 25% faster and converted food 20% more efficiently, while carcass grade was slightly reduced.

I. AITKEN, J. N. & CRICHTON, J. A. (1956). Effect of hexoestrol implantation on growth and certain carcass characteristics of fattening steers.—*Brit. J. Nutr.* **10**, 220-225. 630

II. GILL, J. C., THOMSON, W. & CRICHTON, J. A. (1956). Effect of hexoestrol implantation on fattening lambs.—*Ibid.* 226-233. 631

I. Steers implanted with 120 mg. hexoestrol and fed 12 parts oat straw to one part of concentrates, made substantially greater gains in weight and utilized feed more efficiently than untreated twins. Treatment resulted in elevation of the tail-head and elongation of the rudimentary teats. At slaughter there was no significant difference in dressing-out percentages. Further research was required before hexoestrol implantation could be recommended.

II. Lambs about 8 months old were implanted with 15 mg. hexoestrol. The body wt. of lambs 1-3 months after treatment was not always higher than that of untreated controls. There was considerable mammary development in treated ewe lambs, resulting in a lower grading of the carcass. No instances of prolapse of rectum or vagina, or other ill effects, were observed in treated lambs. It was concluded that implantation of lambs offered no advantages.

—R.M.

SULLIVAN, L. W. & SMITH, T. C. (1957). Influence of estrogens on body growth and food intake.—*Proc. Soc. exp. Biol., N.Y.* **96**, 60-64. [Authors' summary modified.] 632

The effects of oestradiol and its benzoate ester on body wt. and food consumption of immature male rats were studied using controls which were either eating *ad libitum* or pair-fed to the treated animals. In animals eating *ad lib.*, oestrogen treatment for 3 weeks or more resulted in a depression of body wt. accompanied by a voluntary restriction in food intake; body wt. was more greatly depressed than food intake. Restriction of food intake in the controls to amounts eaten *ad lib.* by the treated animals duplicated the effects of the oestrogen on depression of body wt., since the growth curves of pair-fed control and treated groups became parallel.

KOTULA, A. W., DREWNIK, E. E. & DAVIS, L. L. (1957). Effect of carbon dioxide immobilization on the bleeding of chickens.—*Poult. Sci.* **36**, 585-589. [Authors' summary modified.] 633

After bleeding for 30 sec., fowls immobilized with CO<sub>2</sub> lost a greater percentage of their body wt. as blood than controls, but after 3 min.

the difference was no longer significant. Heavy birds lost a smaller percentage of body wt. through bleeding than lighter birds.

TANCOUS, J. J., RODDY, W. T. & O'FLAHERTY, F. (1957). A sheepskin defect: "summer bleeding" disease.—*J. Amer. Leath. Chem. Ass.* **52**, 505-507. 634

Small haemorrhagic or scarred nodules about 2 mm. diam. in sheepskins were believed to be caused by the nematode *Elaeophora schneideri*. The lesions spoiled leather made from affected skins.—R.M.

ANON. (1957). Cabinets for the electrical euthanasia of dogs. pp. 20. London: British Standards Institution. 5s. [B.S. 2909.] 635

This British Standard recommends the provision of a cabinet with three electrodes, clipped on each ear and a hind limb of the dog. A current of 0.5-5 amperes is first applied between the ear electrodes for 0.5-1.5 sec. to induce unconsciousness, then between an ear electrode and the limb electrode for 2-4 sec. to kill the dog. Before applying the current, resistance between the ear electrodes is tested by a special apparatus to ensure that it is not too great for successful electrocution. There are descriptions of electrical tests for the cabinet and of a typical electroplectic fit in a dog.—R.M.

UNDERDAHL, N. R. & YOUNG, G. A. (1957). An isolation brooder for raising disease-free pigs.—*J. Amer. vet. med. Ass.* **131**, 279-283. [Authors' summary modified.] 636

A brooder unit designed for rearing disease-free pigs for use in nutritional studies or herd repopulation programmes is described. The unit will house 12 piglets up to 4 to 5 weeks of age and smaller numbers for longer periods. The construction and operational procedures are described in detail.

BROWNLEE, A. (1957). Higher nervous activity in domestic cattle.—*Brit. vet. J.* **113**, 407-416. [Author's summary modified.] 637

Incidents are described which indicate that cattle have the faculties of learning, memory, appreciation of spatial relationships, and ability to use previous experience in new situations. The reasons for the ease with which a calf learns the site of its dam's udder and the difficulty with which heifers learn how to open doors are discussed. Learning and memory are regarded as faculties which enable the animal to adapt itself to its environment and thus serve towards the same end as structural and immunological adaptations. An instance of what was probably displacement behaviour is recorded.



## TECHNIQUE AND APPARATUS

ULBRICH, F. & GROSS, W. O. (1957). Erregerverschleppung bei Tierimpfungen trotz Kanülenwechsels. [**Transmission of infective agents from animal to animal in spite of change of injection needles.**—*Berl. Münch. tierärztl. Wschr.* 70, 138-139. **638**

After injection of sterile saline soln. into a culture of *Staphylococcus aureus* the syringe was withdrawn, the needle changed, and a tube of sterile broth inoculated. In several tests the broth became contaminated with *Staph. aureus*. It is explained that bacteria rose into the syringe through suction as the needle was removed.

—M.G.G.

YOUNG, G. A., UNDERDAHL, N. R. & SABINA, L. R. (1957). **Swine tissue culture systems. I. Trypsin-dispersed kidney.**—*Amer. J. vet. Res.* 18, 466-472. [Authors' summary modified.] **639**

The growth of trypsinized pigs' kidney cells on glass in static tissue culture was studied. Potential nutrients from a variety of sources were evaluated. Pig embryonic extracts, extracts of foetal lung, liver, and kidney, and porcine and bovine amnion fluids did not increase cell growth when added to a basal medium composed of Hanks' balanced salt soln. and 40% pig serum. Addition of cobalt nitrate or yeast extract or treatment of media with trypsin was also ineffective. But growth was stimulated by an enzymic hydrolysate of lactalbumin. The influence of sera was determined

in a Hanks' lactalbumin basal medium. Serum from adult pigs and cattle was preferable to that from young animals and to horse serum; 5% serum was necessary for growth but cell populations were larger when more serum was added. Optimum concentrations were 20% pig serum and 40% bovine serum.

WYLER, R. & VAN TONGEREN, H. A. E. (1957). **Reactions of the chorio-allantoic membrane of the developing chick embryo to inoculation with various sterile solutions, dispersion media, suspensions and some antibiotics.**—*J. Path. Bact.* 74, 275-279. [Authors' summary copied *verbatim*.] **640**

An account is given of the changes which may occur in the chorio-allantoic membrane as a result of technical procedures and which may be wrongly interpreted as evidence of virus action.

TALMAN, E. L., HUTCHENS, T. T. & ALDRICH, R. A. (1957). **A radioisotope technic for determining allantoic fluid volume of embryonated eggs.**—*Proc. Soc. exp. Biol., N.Y.* 96, 130-133. [Authors' summary modified.] **641**

A method for determining the allantoic fluid volume of embryonated eggs by dilution of radioiodinated human serum albumin is described. Experimental porphyria in chick embryos results in a marked increase in allantoic fluid volume.

*See also absts.* 332 (use of chick embryos in diagnosis of TB.); 342-343 (detection of *L. monocytogenes* cultures); 354 (typing of *E. coli*); 362 (capillary test in brucellosis); 368 (cup test in brucellosis); 369 (typing of brucella cultures); 407 (propagation of F. & M. disease virus); 411 (Aujeszky's virus grown in tissue culture); 419 (cultivation of Borna disease virus in chick embryos); 433 (cultivation of canine hepatitis virus in tissue culture); 445 (gel diffusion precipitin test); 492 (staining and counting *Syphacia obvelata*); 560 (gamma radiography); 561 (paper electrophoresis in diagnosis).

## REPORTS

BRITISH HONDURAS. (1956). **Annual Report of the Agricultural Department for the year 1955.** [GOODBAN, J. W. D.] pp. 55. British Honduras: Govt. Printing Dep. [Livestock diseases p. 33.] **642**

The Veterinary Officer continued a disease survey; there is a tentative list of the protozoal, helminth and arthropod parasites of each species of animal. The most important helminth parasite of cattle was *Oesophagostomum radiatum*, which caused chronic diarrhoea.—R.M.

NETHERLANDS. (1956). **De Gezondheidstoestand van de Veestapel in 1954 en 1955. [Livestock health in 1954 and 1955. Report of the Direc-**

**tor of the Netherlands Veterinary Service.]** [VAN DEN BORN, J. M.] pp. 73. Nederlands: Staatsdrukkerij Uitgeverijbedrijf. **643**

These two years saw great progress in the five-year plan for the eradication of bovine TUBERCULOSIS which ended successfully in May 1956. Of 200,832 herds, 96% were free from TB. at the end of 1955, compared with 62.5% in 1951. A scheme for controlling bovine BRUCELLOSIS was under consideration [see also *V.B.* 27, 2319]; *Br. melitensis* and *swis* did not occur in the Netherlands. FOOT AND MOUTH DISEASES affected 34 herds of ruminants or pigs in 1954 and 48 herds in 1955: it was confined

to a few provinces and to a few months in each year. The position regarding SWINE FEVER and NEWCASTLE DISEASE showed little change.

There is also information on parasitic, metabolic and miscellaneous diseases, and those transmissible from animals to men.—R.M.

## BOOK REVIEWS

ROBERTS, G. FULTON. [Fellow of Jesus College, Cambridge and Lecturer in Pathology in the University.] (1957). **Comparative aspects of haemolytic disease of the newborn**. pp. xi+199. London: William Heinemann. 17s. 6d. 644

Here is a book which can be thoroughly recommended as a concise and comprehensive review of its subject. Although brief it is not superficial and within its 150 pocket-size pages of essential text will be found a thorough account of current views on the subject, including chapters on the disease in the horse and mule and in the pig, followed by 32 pages of references. The author's excursions into medical and veterinary history are fascinating.

—L. M. MARKSON.

— (1957). **Diseases of farm livestock. Section VI. The husbandry and diseases of calves**. pp. 94. London: British Veterinary Association. 645

This handbook describes current methods of husbandry and the principal diseases of calves in the United Kingdom. It is a greatly improved and much enlarged version of the report of the same title issued in 1947. Accounts of leptospirosis, mucosal disease, muscular dystrophy, hypomagnesaemia, and castration

by rubber rings are examples of subjects of topical interest now included. Like other reports of this series, it is not a guide to the literature; this does not diminish its usefulness for practitioners and students.—R.M.

MAYER, K., LACROIX, J. V. & HOSKINS, H. P. [Edited by.] (1957). **Canine Surgery. A text and reference work**. pp. xix+820. Evanston, Illinois: American Veterinary Publications, Inc. 4th Edit. revised and enlarged. \$18. 646

Practitioners will welcome the new edition of this fine book, to which 38 authors have contributed. Many chapters have been revised, such as those by R. M. Cello on dystokia and caesarian section, F. Bloom on the prostate gland, W. O. Brinker on fractures and Archibald & Cawley on neoplasms of bone. New features are ventriculo-cordectomy ("de-barking" operation) and the use of plastic intra-ocular lenses and false eyes. Ear trimming is described in detail: it seems a pity that the American dog owner still insists on this unnecessary operation. Every veterinary student should see this book: because few will be able to afford it, college libraries should have at least one copy.

—R.M.

## BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BENZIE, D. & PHILLIPSON, A. T. (1957). **The alimentary tract of the ruminant**. pp. 24+54 plates. Edinburgh (& London): Oliver & Boyd. 27s. 6d.

BRANDLY, C. A. & JUNGHER, E. L. (Edited by.) (1957). **Advances in veterinary science Vol. III**. pp. xi+579. New York (& London): Academic Press Inc. \$13.00.

CRAPLET, C. (1957). **Le mouton. Reproduction—alimentation—maladies. [Breeding, feeding and diseases of sheep.]** pp. 298. Paris: Vigot Frères. [2nd revised edition of "Maladies du mouton et de la chèvre".]

DODDS, C. (1957). **Biochemical contributions to endocrinology. Experiments in hormonal research**. pp. 76. Stanford, California: Uni-

versity Press. (London: Oxford University Press.) 18s.

GREENFIELD, J. G., SHY, G. M., ALVORD, E. C., JR. & BERG, L. (1957). **An atlas of muscle pathology in neuromuscular diseases**. pp. ix+104. Edinburgh (& London): E. & S. Livingstone Ltd. 45s.

NETTER, A. & CHAPPAZ, G. (1957). **Les infestations à trichomonas. Premier symposium européen. [Trichomonad infections. Report of the first European symposium.]** pp. 381. Paris: Masson et Cie. Fr. 3.00.

POPPER, H. & SCHAFFNER, F. (1957). **Liver: structure and function**. pp. xv+777. New York (Toronto & London): McGraw-Hill Book Company Inc. 155s.



- REIS, J. & NÓBREGA, P. (1957). Tratado de doenças das aves. Vol. I. Doenças produzidas por vírus. Vol. II. Doenças produzidas por bactérias e fungos. Vol. III. Doenças produzidas por protozoários e artrópodes parasitas. Vol. IV. Doenças produzidas por helmintos, doenças da nutrição, doenças dos órgãos e aparelhos vícios—envenenamentos, patologia do desenvolvimento, higiene—terapêutica geral e cirúrgica. [*Treatise of diseases of birds. Vol. I. Diseases caused by viruses. Vol. II. Diseases caused by bacteria and fungi. Vol. III. Diseases caused by protozoan and arthropod parasites. Vol. IV. Helminth parasites, miscellaneous diseases, hygiene and surgery.*] Vol. I. & II. pp. 391 & 416. Vol. III. & IV. pp. 318 & 428. São Paulo: Edições Melhoramentos. 2nd Edit.
- RICHARDSON, U. F. & KENDALL, S. B. (1957). *Veterinary protozoology*. pp. xii+260. Edinburgh (& London): Oliver & Boyd. 2nd Edit. Revised 22s. 6d.
- SCHÖNBERG, F. & ZIETSMANN, O. (1958). Die Ausführung der tierärztlichen Fleischuntersuchung. [*Text-book of meat inspection.*] pp. viii+335. Berlin (& Hamburg): Paul Parey. 5th Edit. DM 41.
- WEIDEL, W. (1957). Virus: die Geschichte vom geborgten Leben. [*Virus—the story of borrowed life.*] pp. 186. Berlin (Göttingen & Heidelberg): Springer-Verlag. DM 7.80.
- WRIGHT, C. A. (1957). *A guide to molluscan anatomy for parasitologists in Africa*. pp. 20. London: British Museum (Natural History). 1s. 6d.
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VENEREAL CONDITIONS

EAR CONDITIONS

BLACK SPOT

## AEROSOL CHLOROMYCETIN TINCTURE

\* Trade Mark.

Each pack contains 2 fl. ozs.  
Chloromycetin Tincture 10%  
with 2 fl. ozs. propellant.

Chloromycetin Tincture 10% (The Liquid Form).  
Supplied in bottles of 2 and 16 fl. ozs. with  
brush.

**PARKE, DAVIS & CO. LIMITED (Inc. U.S.A.) Hounslow, Middx.**

**Tel.: Hounslow 2361**